Journal

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Vol. 137 September 15, 1960 No. 6

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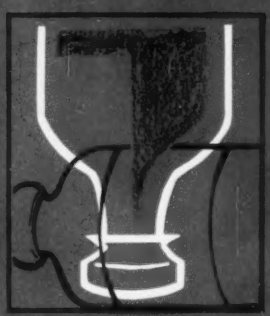

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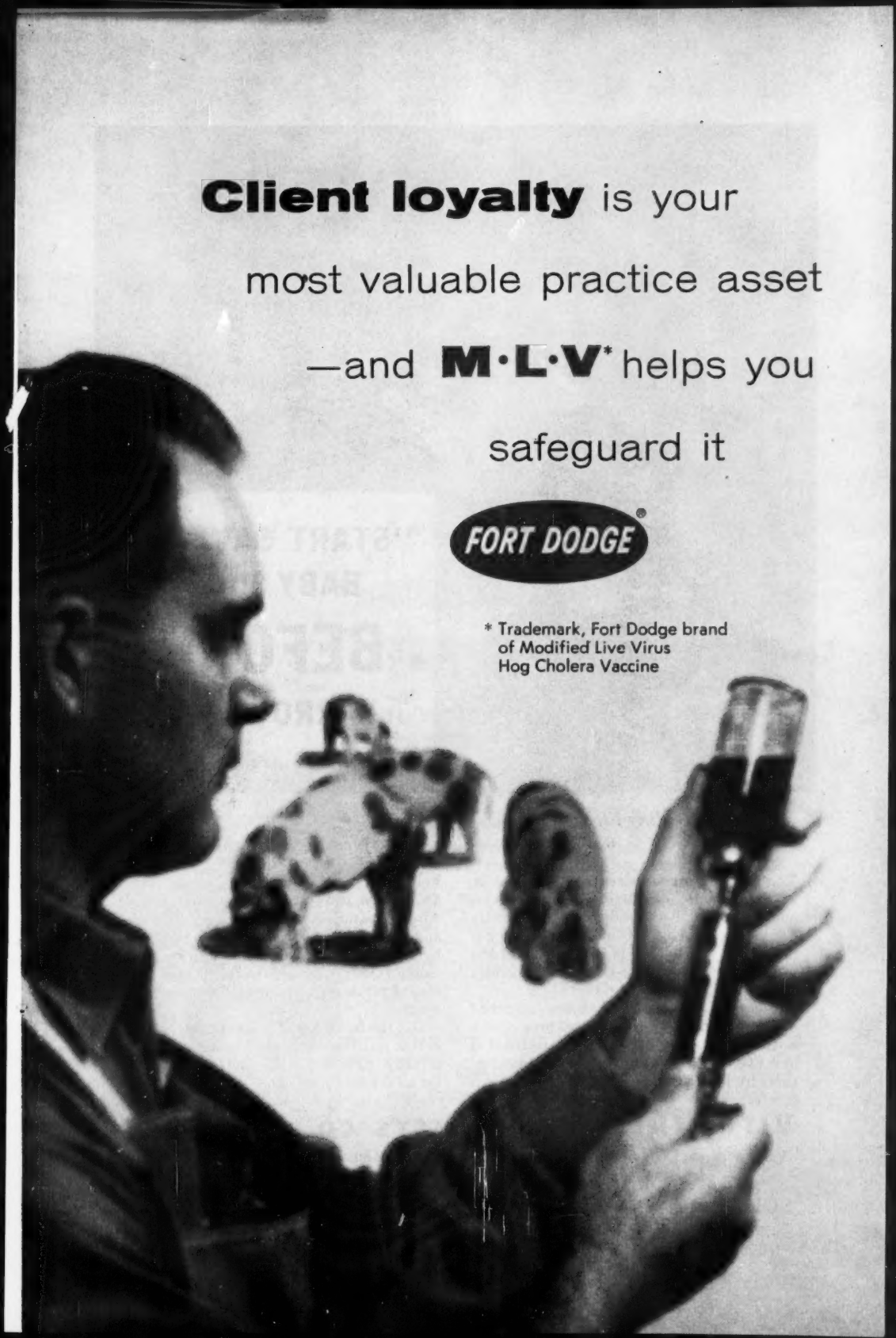
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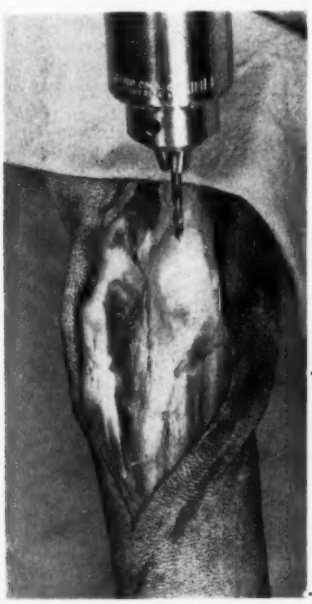
Figure 127. Drilling the olecranon to accommodate the screw prior to sawing the bone in fractures in the pectoral limb.



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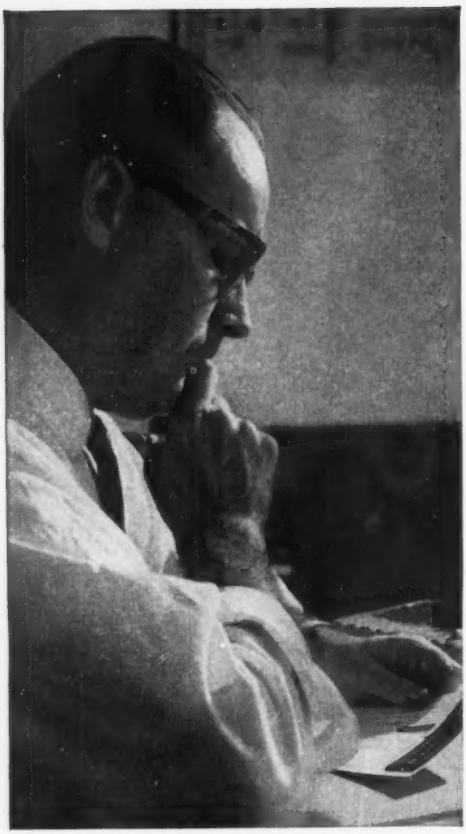

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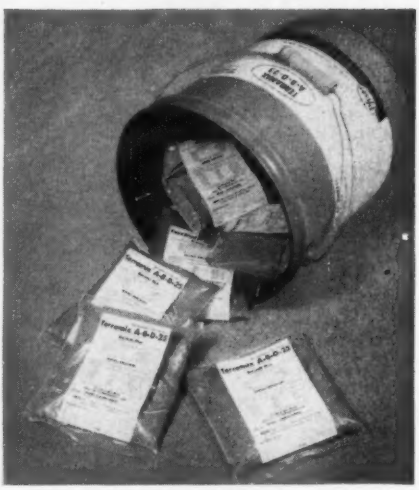

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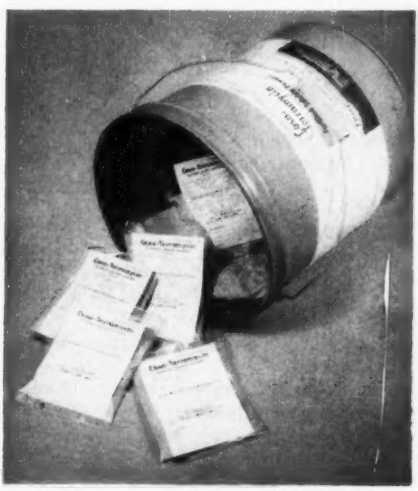

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Social Security Amendments, H.R. 12580, Favored

Senate Finance Committee, August 13, favorably reported with amendments *H.R. 12580,* Social Security Amendments of 1960. (see JOURNAL Aug. 1, 1960, adv. p. 10). Senate adopted all committee amendments en bloc, Aug. 20, and the text of bill, as amended, will be regarded as the original text for purpose of amendment. Debate on the controversial and main issue—medical care benefits for the aged, began Aug. 22.

PROVISIONS:

More Federal Medical Aid for Aged

Principal provisions of the Finance Committee amendments: 1) federal assistance in providing, through cooperation of the states, expanded program of medical care for persons aged 65 and over, utilizing exisiting authority of the several states for paying medical care, hospitalization and drugs for aged on relief or the medically indigent;

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3) an additional $130,000,000 (over house-passed bill) for vendor medical payments, in form of more favorable federal matching, as incentive to fuller development of state medical programs for the aged;

Physicians Services

4) physicians services and other benefits.

Anderson-Kennedy Amendment Provisions

Sen. Anderson (D. N. M.), one of four committee members submitting a minority report, will offer an amendment to the bill, tying it to OASDI benefits. It is supported by Sen. Kennedy (D. Mass.). Principal provisions of Anderson-Kennedy amendment, all on one-year basis, are: 1) medical care for all aged 68 and over who are eligible for social security benefits; 2) maximum of 120 days hospital care; 3) 240 days nursing home care; 4) home health service, not to exceed 365 visits; 5) diagnostic outpatient services. Patient pays first $75 of hospital bill. Cost of financing under Anderson-Kennedy amendment would be an increased payroll tax on employee and employer of one-fourth of one per cent; self-employed would pay three-eighths. Anderson-Kennedy amendment would provide help to those whether or not under social security. The Senate Committee amendments provide for assisting those who need help in meeting additional costs of medical care.
NOTE—The Finance Committee report is Senate Report No. 1856. To obtain, write Senate Document Room, U.S. Capitol Building, Washington 25, D. C.

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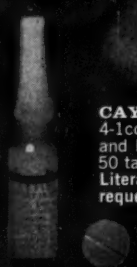

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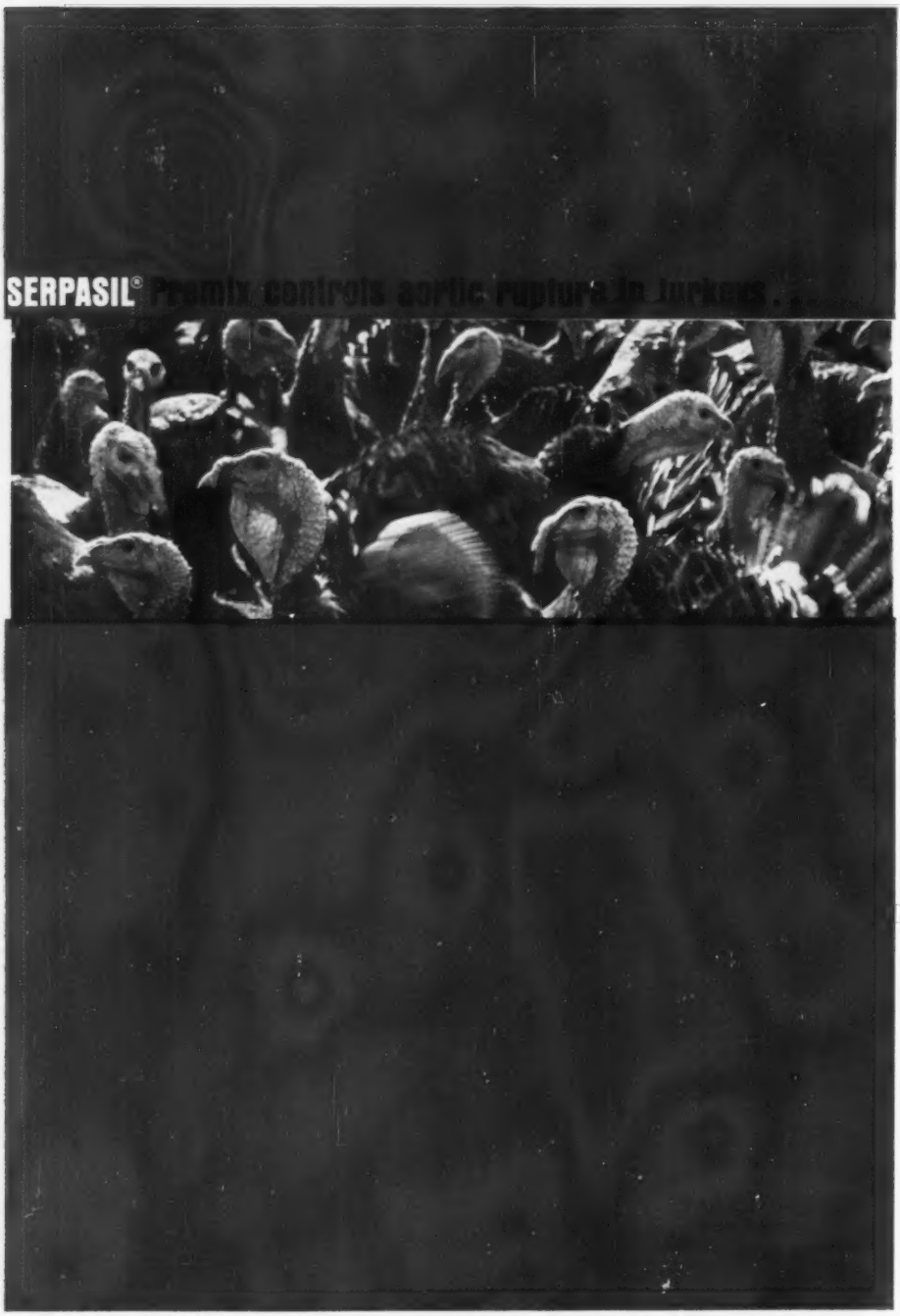
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References: 1. Couch, J. R.: First Conference on the Use of the Tranquilizing and Antihypertensive Agent SERPASIL in Animal and Poultry Production, College of Agriculture, Rutgers, The State University, New Brunswick, N. J., May 7, 1959. 2. Carlson, C. W.: Ibid. 3. Barnett, B. D.: Second Conference on the Use of Reserpine (Serpasil) in Poultry Production, The Institute of Agriculture, University of Minnesota, St. Paul, Minn., May 6, 1960. 4. Carlson, C. W.: Ibid. 5. Waibel, P. E.: Ibid. 6. Morrison, W. D.: Ibid. 7. Weiss, H. S.: First Conference, etc. 8. Burger, R. E.: Ibid. 9. Parker, E. L.: Second Conference, etc. 10. Weiss, H. S.: Ibid.

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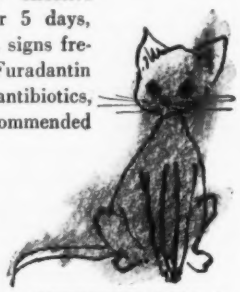

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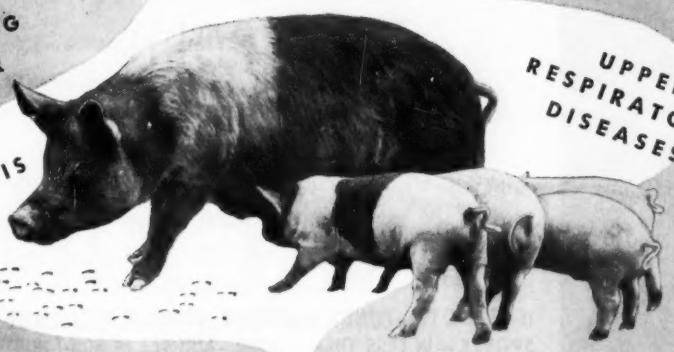

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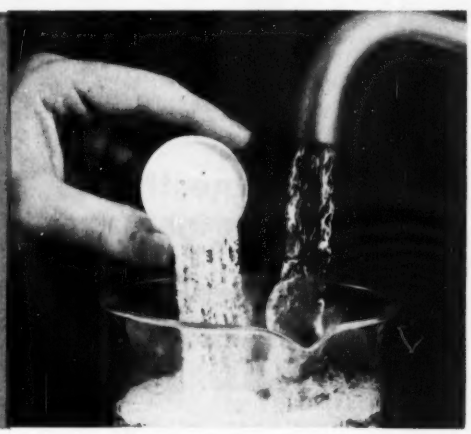

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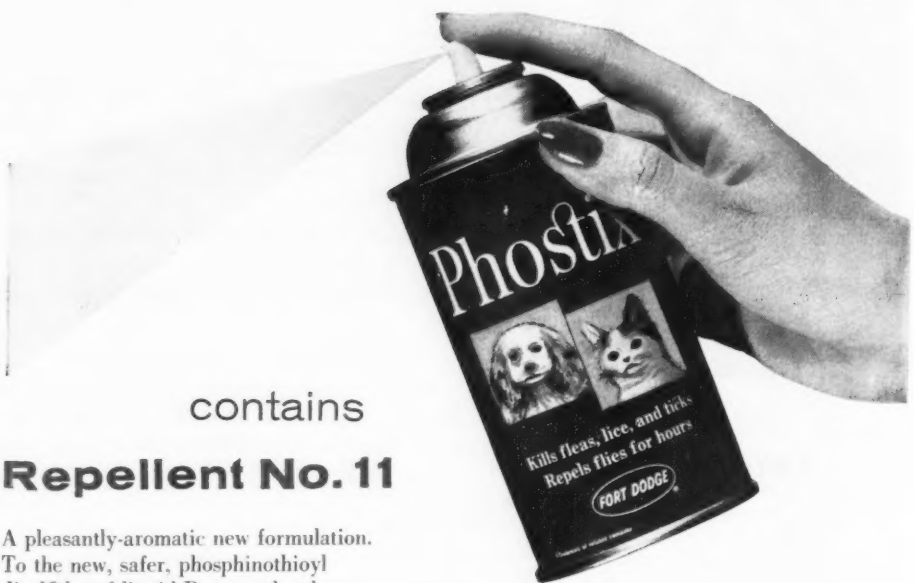

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Journal

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Stomach Ulcers in Swine

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DURING recent years, an increasing incidence of gastric ulcers among animals has been reported. Stomach ulcers were observed in horses,[12,19] cattle,[1,2,19,28,29] calves,[7,16,17] sheep,[12] dogs,[30] foxes,[23] cats,[3] monkeys,[3,4,15] rabbits,[17] rats,[11,27] guinea pigs,[3,17] mink,[9] sea mammals,[22] and swine.[8,14,24,25]

Many animals have superficial ulcers of the alimentary tract in the course of acute infectious diseases, such as foot-and-mouth disease, rinderpest, mucosal disease, malignant catarrhal fever, hog cholera, and purpura haemorrhagica. In these diseases, there are more or less superficial erosions of the mucosa with the muscularis mucosa intact; therefore, they are not considered typical peptic ulcers.

Laboratory animals have been employed experimentally in an attempt to clarify the pathogenesis and cause of gastric ulcers. Some factors said to be involved in the development of gastric ulcers are infectious, toxic, traumatic, hormonal, nutritional, and psychosomatic conditions.

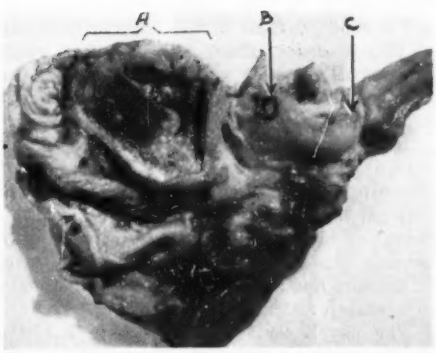

Fig. 1—(A) Chronic peptic ulcer in swine stomach embraces the whole glandless area and part of the glandular area of the cardia; (B) acute ulcer in the fundic area; (C) small ulcer on the torus pyloricus at the site of a new peptic ulcer.

Streptococci from human stomach ulcers and adjacent lymph nodes have been isolated and reported to produce ulcers in laboratory animals by injection of their subcultures or their toxins.[17] Acute gastric ulcers were produced in cats and monkeys by intraperitoneal injections of a nonlethal dose of "gastrotoxic serum" prepared by immunizing rabbits with gastric mucosa from cats or monkeys.[3] The release of toxins and histamine following burns in

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Fig. 2—Old peptic ulcer surrounding esophageal orifice replaces whole glandless area of the cardia and encroaches on glandular area. A blood clot is attached to the lower portion of the ulcer.

man has been said to result in the formation of ulcers.[13]

Ulcers in the stomachs of sea mammals are a good example of the traumatic origin of this disorder. These animals often swallow small stones which traumatize the stomach mucosa, resulting in development of stomach ulcers.

In regard to nutritional causes for ulcers, it has been reported that deficiency of vitamin E resulted in ulcerations of the intestinal mucosa in pigs[5] and that a diet deficient in vitamin C[25] caused guinea pigs to develop peptic ulcers. Rats fed a high level of calcium had a significantly high incidence of stomach ulcers.[11]

The psychosomatic factor is probably a most important cause of ulcers in man and, perhaps, in lower animals. A monkey subjected only to the physical stress of electrical shock at 20-second intervals for 6 hours, followed by a rest period of 6 hours, did not develop ulcers; whereas a second monkey subjected to the same treatment, but with the added stress of trying to eliminate the shocks by pushing a lever, died from a perforating ulcer on the 23rd day.[4] A similar experiment performed with rats led to analogic results.[18] It appears that alternating periods of stress factors, such as electrical shock, fatigue, pain, fear, anxiety, and worry, can cause an increased blood level of corticosteroids which, in turn, stimulates excessive gastric secretions.[4] Similarly, vagotonia may result in excessive secretion of hydrochloric acid, as well as spasm and ischemia of the stomach mucosa.

Gastric ulcers were reproduced in cats, monkeys, and guinea pigs by increasing the acidity of the stomach by the administration of hydrochloric acid.[3] In view of such findings, there is the possibility that hyperchlorhydria may be essential in the development of peptic ulcers, but other factors help to hasten the process. In human beings, the presence of free hydrochloric acid is considered essential to the development of peptic ulcers. Peptic ulcers occur only when the mucous membrane is immersed in free hydrochloric acid.

The purpose of this paper is to describe the stomach ulcers frequently found in swine at the Univerity of Wisconsin farms during 1957-1959.

Case Reports

Case Report 1.—During the summer of 1957, 6 cases of fatal bleeding into the stomach as a result of stomach ulcers were observed among 3- to 5-month-old Chester White and Duroc swine. Apparently

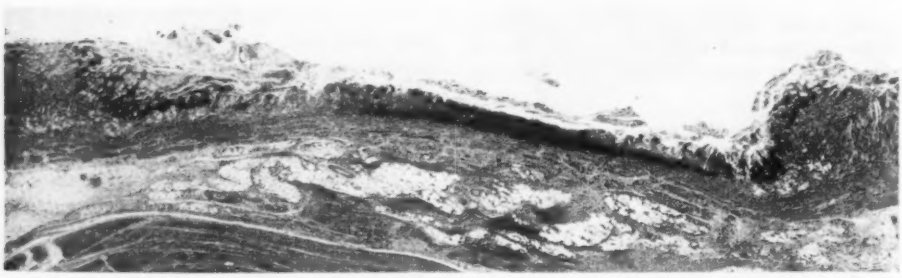

Fig. 3—Acute fundic ulcer penetrating the entire mucosa and invading the muscularis mucosae. Profuse polymorphonuclear neutrophilic infiltration occurs in the submucosa. Fibropurulent exudate with necrotic debris covers the inflamed granulation tissue.

healthy, well-nourished swine which had access to pasture died suddenly. At necropsy, the distended stomachs were filled with liquid and clotted blood as a result of peptic ulcers. The ulcers, of different sizes and shapes, were located in the glandless area of the cardia and in the fundic region.

Case Report 2.—A Hampshire boar, 8 months old, used for artificial insemination, was found breathing rapidly and unable to rise. His body temperature was subnormal. He died a half hour later. At necropsy, the carcass was extremely anemic and the blood, watery. The distended stomach was filled with blood clots and the intestines contained tarry digesta. There was 1 ulcer, 6 to 8 cm. in diameter, around the esophageal orifice in the glandless region of the cardia, 1 in the fundic area, and 1 in the mucosa on the torus pyloricus (fig. 1).

Case Report 3.—An 8-month-old Chester White barrow, 1 among 4 in a pen, was found vomiting blood. Subsequent anemia and weakness were so advanced that the pig was reluctant to move, even after vigorous stimuli. His skin and snout were pale, his breathing fast and, in part, by mouth. It was decided to slaughter the pig. At necropsy, the stomach and intestines were found to be filled with fresh and partly digested blood. One ulcer 7 by 3 cm., was seen in the cardia around the esophageal orifice. This barrow and 7 others were being fed what was considered to be a well-balanced ration with trace minerals, zinc, irradiated yeast and antibiotics. When the remaining 7 pigs were slaughtered a few weeks later, 2 others were found to have ulcerated stomachs.

During 1957-1959, a series of experiments were conducted to determine the influence of certain nutritional and environmental factors on the development of parakeratosis of swine. Of a total of 161 swine, predominantly of Hampshire and Poland China breeds, 12 died as a result of an acute stomach hemorrhage and 9 died as a result of chronic bronchopneumonia.

Of particular interest were 35 swine used in an experiment during the early months of 1959. During the experiment, 8 pigs died of acute hemorrhage into the stomach; moreover, when the experiment terminated, examination at slaughter showed that an additional 15 pigs had stomach ulcers. Thus, gastric ulcers were found in 23 of the 35 swine. The ration used in the parakeratosis experiments contained amounts of calcium (1.3% of the ration) in excess of the recommended levels, but whether this was related to the high occurrence of ulcers is not known. In this experiment, there was no evidence that dietary supplements of zinc, copper, or cadmium had any influence either in causing or in preventing

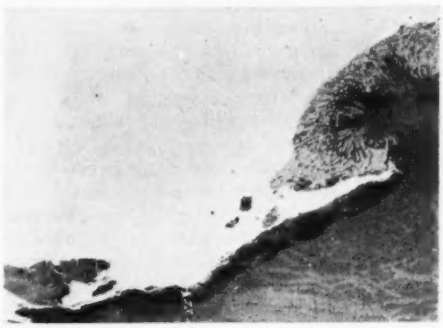

Fig. 4—Section through a deeply created chronic ulcer in the glandless area of the stomach shows an overhanging margin and a broad, deeply stained, necrotic zone in the base of the ulcer.

the ulcers, but it must be acknowledged that these elements, especially zinc, are suspicious factors because ulcers seem to be more common since the elements have come into everyday use.

During the summer of 1959, an experiment on parakeratosis was conducted with 56 weaned pigs that were fed similar rations. The pigs developed only mild signs of parakeratosis and had no evidence of stomach ulcers. These pigs were slaughtered when they reached market weight. Examination of their stomachs at that time revealed slight erosions on the glandless area of the cardiac mucosa in 5 pigs.

During the summer of 1959, an unexplained high incidence of stomach and duodenal ulcers among swine was observed in Iowa.[23]

Our attempts to reproduce stomach ulcers in 2 weanling pigs by intravenous injection of the microorganisms isolated from base and edges of naturally developed ulcers were not successful.

Clinical Signs

The majority of swine were kept indoors, where they could be observed closely. Early stages of stomach ulcers were not apparent.

Pigs gained weight, were vigorous, and were apparently healthy. Ulcerative changes at this stage were evidently confined to the epithelial layer only. As the process progressed and deeper layers of the mucosa were destroyed, there was occasional gastrointestinal bleeding. This was manifested by the feces becoming dry and dark in color, even black. Bleeding lasted 1 to 2 days, occasionally longer, then the color of feces returned to normal. Such hemorrhages resulted neither in paleness of the visible mucosae, nor in interference with weight gains. In more advanced cases, bleeding was more profuse, and feces were tarry and of a semiliquid consistency for 3 to 4 days. The resulting anemia was obvious and was associated with rapid, shallow breathing, loss of appetite, and interruption of weight gains. Affected pigs preferred to lie down; their body temperatures were below normal. At this stage, affected pigs sometimes recovered gradually. Some of the recovered pigs survived until the termination of the experiment, but ulcers were found in their stomachs at slaughter. Some affected pigs died of other causes, such as bronchopneumonia. Occasionally, severe stomach bleeding was manifested by vomiting of quantities of blood and early death of pigs.

It is difficult to estimate the time necessary for the development of peptic ulcers in swine. That their development can be acute and fulminating as shown by the death of a hog, 3 months old. Diagnosis of peptic ulcers from the early manifestations is difficult, also. When recognized from evidence of bleeding, they are at the terminal stage.

In an attempt to improve diagnosis and study of stomach ulcers, the human gastroscope was tried in an experiment using swine weighing 80 to 120 lb. Prior to gastroscopy, feed was withheld from them for 24 hours, and water, for 12 hours. General anesthesia was administered. In a dark room, the pig was placed on its side on an operating table for small animals. Using the sagittal line of the head, neck, and backbone as landmarks, the speculum was inserted into the mouth, the tongue was pulled out, and the lubricated gastroscope was introduced gently into the stomach. The stomach was then moderately inflated with air. It was evident that larger swine would require a larger gastroscope.

A gastroscopy does not require a great deal of experience in order to visualize exactly all the parts of the surface of the stomach; but position of animal and gastroscope, depth of introduction, emptiness of the stomach, amount of inflation, and any slight movement of the head are entities which are important to the success of gastroscopy.

The surface of the mucosa of the stomach is normally smooth, slightly moist, glistening, and orange-red. Blood vessels are visible in the cardia along the great curvature. Swallowed mucus or regurgitated duodenal content are manifested as flaky, whitish patches. An increased quantity of mucus in the stomach is seen in the presence of gastric ulcers and in gastritis. The demarcation between the gastric and glandless area of the cardia mucosa is a sharp line. The glandless area of the cardia, which is covered with esophageal mucosa, is gray or grayish pink. Mucosal hemorrhages are recognized as dark red spots.

Generally, gastric ulcers appear as bright white or yellowish white areas, surrounded by an orange-red mucosa. The edge of an ulcer is always sharp, often undermined, swollen, and inflamed. The base is depressed, flat, or crater-like. Sometimes the base of an ulcer has dark red streaks as a result of a blood clot. The shadows in the folds of mucosa may be mistaken for ulcers.

The stomach ulcers we saw were located predominantly in the glandless area of the cardia, around the esophageal orifice. In early stages, there was a proliferation of stratified squamous epithelium, arranged in small spots over a wide area and resembling small warts. These islands of epithelial proliferation sloughed off, leaving small superficial erosions, the base of which was dry, rough, and light brown. As the

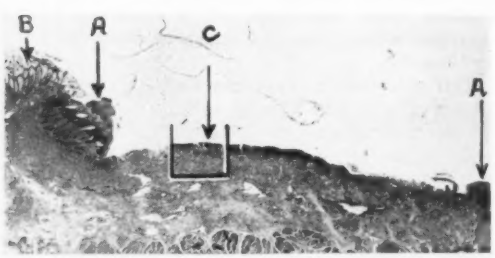

Fig. 5—Acute peptic ulcer in the glandless area of the cardia—(A) stratified squamous epithelium of the cardia; (B) glandular epithelium of the cardia; (C) an artery closed by endarteritis which has become involved in the necrotic zone.

process progressed, the erosions had a tendency to blend into 2 to 5 small ulcers of different sizes and shapes varying in size from 5 to 12 mm. in diameter. Their edges were uneven, slightly elevated, granulated, and covered with brownish necrotic debris and feed particles. Later, these small ulcers fused and formed 2 elliptic- or irregular-sized ulcers, located at both sides of the esophageal orifice, or 1 crescent-shaped, U-shaped, or circular ulcer with the esophageal opening in the center. At a later stage, these ulcers had a tendency to spread over the whole glandless area of the cardia, or even the glandular area of the cardia. As they progressed in size, they also increased in depth so that they eventually reached the submucosa, muscularis mucosae, muscularis propria, and subserosa. During these stages, more or less severe hemorrhages occurred as a result of erosions of the branches of the gastric artery. The chronic ulcers usually had a markedly thickened or elevated brim hanging over the edges of the ulcers. Such thickening resulted in the formation of a crater appearance. Occasionally, healed ulcers were found in the form of a scar.

Ulcers in the fundic or pyloric areas, which were much less common, started as small superficial necrotic areas on the inflamed gastric mucosa, and gradually enlarged. The edges were usually inflamed and swollen and, as the ulcers increased in size and depth, their brims had a tendency to hang over the deeper portions. The latter were brownish and covered with fibropurulent material, necrotic tissue, feed particles, and sometimes blood clots (fig. 2).

In the early stages of acute stomach ulcer formation, there was focal proliferation of the stratified squamous epithelium with subsequent necrosis of the mucosa. This necrosis was superficial or it extended into the submucosa. The margin and the base of the ulcer were edematous to varying degrees. In some cases, particularly in fundic or pyloric ulcers, edema was so pronounced that the whole lesion was elevated above the surrounding parts. As a result of acute inflammation, there was significant congestion in adjacent mucosa and submucosa, and capillaries and small vessels were prominent. Cellular reaction was manifested by an accumulation of neutrophils and a few lymphocytes which formed the zone of demarcation. When the necrotic process had progressed and the ulcer had deepened, the walls of capillaries and small vessels were destroyed, causing an oozing of blood into the stomach. At the same time, small thrombi in the adjacent vessels developed and more pronounced leukocytic infiltration occurred. Also, there was evidence of repair by isolated growth of fibroblasts. As the destruction at the edges and base of the ulcer advanced, the muscularis mucosae underwent necrosis, and infiltration with polymorphonuclear neutrophils and lymphocytes became more evident (fig. 3). When the process of necrosis subsided, infiltration with lymphocytes and eosinophils appeared and the fibroblasts were more prominent. If perforation or fatal hemorrhage did not take place, distinct fibrosis, especially of the base of the ulcer, became evident.

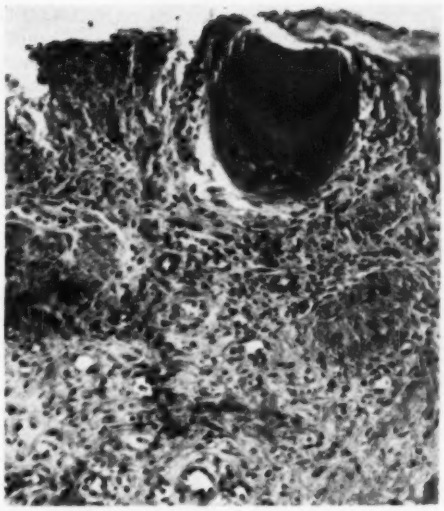

Fig. 6—Blood vessel in ulcerated area is plugged with a thrombus (fig. 5-C).

Discussion

Although stomach ulcers are apparently becoming more prevalent among swine, their etiology is obscure. Many workers have isolated different microorganisms, including fungi, from such ulcers, but few have been able to reproduce the disorder. If infection were the main cause, more stomach ulcers would occur in connection with bacteremias or septicemias. A dis-

turbed circulation in the mucosa and submucosa of the stomach, caused, for example, by thrombi or emboli, cannot account for ulcer formation in view of an extremely rich blood supply with free anastomosis in this region. A toxin might be an actual or contributing cause of gastric ulcers, since injection of bacterial toxin has resulted in ulceration of the stomach mucosa. One might suspect that the cause of the stomach ulcers observed during the experiment on parakeratosis described above was dietary; however, the experiments performed during 1957 did not result in a single death among experimental animals, although many of them developed advanced signs of parakeratosis, similar to those of the 1958 experiment. Furthermore, the ration used in the experiment performed during the summer of 1959 which was similar to that used in the winter experiment, resulted neither in the development of peptic ulcers nor in pronounced signs of parakeratosis.

Summary

The clinical, pathologic, and histopathologic descriptions of stomach ulcers in swine warrant the following conclusions:

1) Stomach ulcers are not uncommon in swine.

2) No etiologic agent has been incriminated.

3) Although parakeratosis and peptic ulcers sometimes existed together, it seems unlikely that parakeratosis necessarily predisposes to ulcer formation.

4) Dietary supplements of zinc, copper, and cadmium did not appear either to cause or to prevent the ulcers; however, the question of whether dietary calcium influenced the incidence of ulcers cannot be answered at present.

5) The seasonal factor may play an etiologic role, as in man.

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Significance of Husbandry, Pleuropneumonia-like Organisms, and Hemophilus influenzae suis in the Pathogenesis of

Porcine Polyserositis with Arthritis

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MICROBIAL, pathologic, and epidemiologic details characterizing a porcine disease, descriptively called polyserositis with arthritis, have been published recently.[4] It is the purpose of this article, without repeating experimental details, to alert the practitioner to the ecologic, environmental, and management situations favoring the occurrence of this disease and to suggest a basis for control. This will be done by presenting a field case as it was encountered by a practitioner in North Carolina. Similar cases have been seen in Pennsylvania and New York, and no doubt the disease is widespread.

Glasser's disease,[1-2,6] and possibly the recently described porcine disease, NUD,[7] seem similar to the polyserositis described by us.[4] With respect to etiology and pathogenesis, European workers[2,3] emphasized the role of bacteria, generally Hemophilus. On this continent,[1,6] pleuropneumonia-like organisms (PPLO) have been incriminated. In general, difficulties have been encountered in reproducing field cases of polyserositis with pure cultures of either of the microbes in question. For example, pigs were shipped for long distances and infected by unnatural routes with large numbers of Hemophilus in order to simulate the clinical signs seen in pigs with field cases.[2] It might also be inferred from certain early work[5] that *Hemophilus influenzae suis* alone was not highly pathogenic. Some workers,[1,6] infecting pigs with PPLO, observed rather mild clinical signs. Polyserositis lesions, but no persistent high fevers and death as seen in the field, were produced by the PPLO.

Work at North Carolina State College[4] indicated that at least 2 microorganisms together, PPLO and *H. influenzae suis*, were required to produce all the clinical signs seen in field cases. PPLO had the capacity to inflame serosal and synovial membranes, leading to peritonitis, pleuritis, pericarditis, and arthritis. The Hemophilus produced the high fever, anorexia, unsteady gait, weakness in hindquarters, hemorrhagic gastroenteritis, cystitis, and death. However, environmental and management conditions under which pigs became susceptible appeared to be more important to the development of this disease than did the presence of these potential pathogens in the environment.

In perusing the literature for information concerning PPLO and *H. influenzae suis*, one gains the impression that these organisms are ubiquitous and relatively innocuous. Yet, information contained in our case reports indicates that pigs raised in a certain manner react violently when exposed to these organisms, developing a number of clinical signs, and finally die as a result of this exposure. Pigs raised differently and exposed to these organisms equally (same herd, time, and place) develop no clinical signs of disease. This is further amplified by experimental work which demonstrated that as few as 500 *H. influenzae suis* bacteria injected either intramuscularly or intratracheally killed, within 3 days, colostrum-free pigs raised in isolation; conversely, injecting as many as a million Hemophilus bacteria in littermates, raised under normal farm conditions, produced no discernible signs of disease. Thus, the weak link in the chain of events leading to the full expression of disease appears to be the method of raising the pigs, rather than the presence of pathogenic microorganisms in the environment.

An awareness of the marked effect of environment and management on the manifestation of this disease seems particularly meaningful at this time, because the swine industry is moving rapidly toward a more technical type of husbandry.[8] This change in husbandry is based on production of disease-free herds which are raised in relative isolation. These herds are made up of colostrum-free pigs or pigs obtained from colostrum-free ancestors. Since these pigs are usually susceptible to the polyserositis syndrome, the need for strict isolation becomes of major significance.

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Case Report

History.—Farmer A, with a continuous pig parlor operation, bought weaned pigs for feeding to market weight and usually experienced little trouble with disease. However, disease became an acute problem in 2 litters (22 pigs) bought from a neighbor who had a small, sanitary breeding program. There were fewer than 5 sows in this breeding program, and the herd had been closed for several years. These apparently healthy pigs were vaccinated for hog cholera and placed in isolation for 21 days when brought to Farm A. During this 21-day period, there was no evidence of disease. At the end of the isolation time, these pigs were moved to one of the parlors that had contained pigs 3 days previously. Within 7 days, in the new group of pigs only, the following signs of disease were evident: anorexia, pyrexia, stiffness leading eventually to prostration, and death within 12 to 24 hours after appearance of clinical signs. Twelve pigs died (8 from 1 litter; 4 from the other).

Treatment.—The remaining pigs were treated with a combination of penicillin and dihydrostreptomycin, and no further deaths occurred.

Postmortem Findings.—Macroscopically, hemorrhagic gastroenteritis, fibrinous peritonitis, pleuritis, and pericarditis were observed. Lymph nodes were enlarged and had peripheral hemorrhages. A few petechiae were present on the mucosa of the urinary bladder. Meningeal congestion was evident grossly. Microscopically, the leptomeninges covering the cerebrum, cerebellum, and brain stem were infiltrated heavily with neutrophils and some mononuclear cells. This infiltration was patchy in some areas and diffuse in others. In the cerebral cortex, there was a relative loss of neurons with focal demyelination. Also, there was a patchy loss of Purkinje cells in the cerebellar folia, with widespread loss of myelin in the white matter.

Hemophilus influenza suis was isolated from brain, liver, spleen, and lung. We found that the longer the disease progressed, the less likely it was that Hemophilus bacteria would be isolated from the visceral organs.[4] However, Hemophilus in large numbers were easily isolated from the brain when none could be isolated from the visceral organs. This was accomplished by inserting a cotton swab into a hole chiseled in the cranium, streaking a blood agar plate, and inoculating Staphylococcus throughout the streak.

Discussion and Conclusion

The 6 other cases studied were, in essence, similar to the one described. The essential point in these cases (which is also borne out by experimental work) is that the pigs that are affected usually come from a herd which (for reasons of isolation) is no longer constantly exposed to an environment containing Hemophilus bacteria. Therefore, these pigs do not become immunized or resistant to this bacterium in the course of their development.

When these susceptible pigs are introduced into a herd in which Hemophilus are present, only these new pigs become sick, while the established herd remains free of disease signs. In this respect, the disease seems noncontagious. In the herd with Hemophilus present in the environment, the host and the bacteria quickly adapt to a "live and let live" way of life so that, with the exception of an infrequent attack in an individual animal, there is little reason to suspect the pathogenicity of Hemophilus. However, in a population that has been isolated from Hemophilus and is, therefore, susceptible, any contact will produce devastating results.

Our case reports show that occasionally it is possible to raise susceptible pigs under usual farm conditions—especially where the herd is closed and all replacement pigs come from within the herd rather than from outside sources. Experimentally, one can readily obtain susceptible pigs by raising them in isolation on diets free of colostrum.

Fortunately, this disease is rare under present management procedures and is easily controlled by antibiotic therapy. Under experimental conditions, penicillin, dihydrostreptomycin, and oxytetracycline all protected susceptible pigs injected intramuscularly with lethal doses of Hemophilus bacteria. In the field, a combination of penicillin and streptomycin has given dramatic results. Experimentally, even low levels of antibiotics have affected the course of this disease. For example, susceptible pigs were inoculated with lethal doses of Hemophilus while feeding on a ration containing 75 mg. of tetracycline per ton. In these pigs, disease development seemed to be slow. Anorexia, pyrexia, and

stiffness were delayed and fleeting, and only a few pigs died. At postmortem, lesions were less marked. Instead of large, ecchymotic hemorrhages in the stomach, intestines, and bladder, and congestion in the epiglottis and kidneys, petechiae similar to those found in hog cholera were observed.

Should management procedures be such that large numbers of susceptible pigs are produced, then perhaps a prevention program predicated on immunization techniques should be considered. Presumably, this is the control method used in nature. Preliminary results with immunization procedures indicate that this disease would lend itself to control utilizing vaccination.

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Comparative Study of Isolates with Original Feline Viral Rhinotracheitis Virus

Three separate virus isolates were compared with the original virus of feline viral rhinotracheitis in regard to their cytopathogenicity, their ability to produce plaques in cultures of feline renal cells, and their serologic relationship. Each virus was obtained from the throat of a cat with clinical signs of an upper respiratory infection and was isolated in cultures of feline renal cells.

The constant features of the cytopathogenicity of all 4 isolates studied were the occurrence of intranuclear inclusions and the formation of multinucleated giant cells. In each instance, macroscopic plaques, 1 to 3 mm. in diameter, were produced in feline renal cultures overlayed with agar on the sixth day following inoculation. The plaque formation of the 4 viruses was uniform in size and morphology. They were also similar antigenetically according to the results of serum-neutralization tests. There were no distinguishing characteristics in their behavior in the systems investigated to indicate that the 4 isolates were different.

Since the feline viral rhinotracheitis virus has been isolated from cats in both the East and West Coast regions of the United States, it is suggested that it may be widespread in this country. Further, since this virus is the cause of an upper respiratory disease, it has the potential of being a major problem in feline practice, particularly in cat colonies.—[*R. A. Crandell, J. R. Ganaway, W. H. Neimann, and F. D. Maurer: Comparative Study of Three Isolates with the Original Feline Rhinotracheitis Virus. Am. J. Vet. Res., 21, (May, 1960): 504-506.*]

Solanum elaeagnifolium,

Silver-Leafed Nightshade, Poisoning

in Livestock

William B. BUCK, D.V.M.
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MANY SPECIES in the family Solanaceae are toxic to both man and animals under certain conditions. Reports have appeared pertaining to the toxicity of various members of this family,[1,4,5,8] but there is little information on the toxicity of silver-leafed nightshade (*Solanum elaeagnifolium*).

Numerous cattle losses in western Texas have been attributed to the ingestion of silver-leafed nightshade; therefore, a series of feeding trials using this plant were conducted at the Animal Disease Investigations Laboratory, Marfa, Texas.

Description and Distribution

Solanum elaeagnifolium, also known as white horse nettle, trompillo, and silver-leafed nightshade, has been described as a perennial herb with spiny, silvery-hairy stems and leaves, the hairs being scurflike and branched.[4] When ripe, the fruit is yellow and smooth (fig. 1).

Its geographical distribution extends from the middle western states southwestward into Arizona. It has also been introduced into the Pacific coastal and Intermountain states.[2] It is usually located in meadows, pastures, cultivated fields, and along roadways.

Field Cases of Poisoning

Solanum elaeagnifolium has frequently been incriminated as the cause of cattle losses in western Texas. Two specific examples of such losses will serve to illustrate its importance.

During the period, 1954 through 1957, a ranch near Presidio, Texas, suffered cattle losses in a herd of 400 to 500 head in an irrigated Bermuda grass pasture containing silverleaf nightshade. No accurate count of the number of deaths was determined, but an estimate of 12 to 20 head annually would be conservative. Many affected cattle eventually recovered; often 2 or 3 dead cattle would be found with several others obviously ill. If cattle survived more than 2 to 3 days after silver-leafed nightshade ingestion, they usually recovered.

Frequently, losses occurred soon after cattle were placed on nightshade-contaminated Bermuda grass pasture. During investigations of the losses, cattle were observed to eat the nightshade readily. Although tentative diagnosis of nightshade poisoning was made, it was difficult to prove. The owner was reluctant to accept the incrimination of *S. elaeagnifolium,* and little information on this plant existed in the literature.

The second example of cattle losses in western Texas attributed to *S. elaeagnifolium* involved their accidental consumption of ripe fruit when they ate feed placed on the ground during the winter. On necropsy, rumen contents contained many seeds and hulls of ripe nightshade berries. Poisoning by ripe Solanum fruit has been described,[1,7] but most authors ascribe more toxicity to the green leaves, stems, and fruit.[3-5,8]

The most constant signs of toxicity seen in affected cattle were rapid, labored breathing, with an expiratory grunt; salivation and slobbering; nasal discharge; normal to slightly above normal temperature; and, in less acute cases, a yellow discoloration of the skin in lightly pigmented

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TABLE 1—Results of Feeding Trials with *Solanum elaeagnifolium*

Animal and No.	Weight of animals (kg.)	Weight of plant fed daily (Gm.)	Gm./kg. body weight	Percentage of body weight	No. of consecutive daily doses	Results
RIPE FRUIT FORCE FED						
Cattle						
1	104.5	128	1.2	0.12	2*	Mild clinical signs; recovered.
	125.0	120	1.0	0.10		Moderate clinical signs; recovered.
2	111.4	131	1.2	0.12	2*	Moderate clinical signs; recovered.
	138.6	120	0.9	0.09		Moderate clinical signs; recovered.
3	79.5	227	2.9	0.29	1	Severe poisoning; euthanatized.
GREEN FRUIT FORCE FED						
Cattle						
4	243.2	243	1.0	0.10	2	No clinical signs.
	243.2	486	2.0	0.20		Mild clinical signs; recovered.
Sheep						
1	33.6	227	6.8	0.68	1	Mild clinical signs; recovered.
Goats						
1	16.8	114	6.8	0.68	3	No clinical signs.
		114	6.8	0.68		
		227	13.5	1.35		
Goats						
2	21.4	114	5.3	0.53	6	No clinical signs except for slight nasal discharge the first day.
		227	10.6	1.06		
		341	15.9	1.59		
		341	15.9	1.59		
		341	15.9	1.59		
		454	21.2	2.12		
GREEN LEAVES AND STEMS FORCE FED						
Goats						
3	30.0	227	7.6	0.76	6	No clinical signs.
		341	11.4	1.14		
		454	15.1	1.51		
		568	18.9	1.89		
		681	22.7	2.27		
		681	22.7	2.27		
WHOLE PLANT AND RIPE FRUIT FED FREE CHOICE						
Cattle						
5	104.5	454	4.3	0.43	6	Moderate clinical signs beginning on the sixth day.
		1476	14.1	1.41		
		1271	12.2	1.22		
		454	4.3	0.43		
		182	1.7	0.17		
		318	3.0	0.30		
WHOLE PLANT AND GREEN FRUIT FED FREE CHOICE						
Sheep						
2	.....	227	....	.....	6	No clinical signs.
		.....	....	.....		
		772				
		227				
		182				
		136				
3		227	....	.....	5	No clinical signs.
		.....				
		227				
		.....				
Goats		.....				
4	.....	227	....	.....	4	No clinical signs.
		.....				
		227				
		227				
5	.....	227	....	.....	4	No clinical signs.
		.....				
		114				
		227				
Rabbits						
1	Approx. 2.5	120	....	.....	15	Died.
2	Approx. 2.5	120	....	.....	22	No clinical signs.

*Second feeding 6 weeks after first feeding.

Fig. 1—Mature *Solanum elaeagnifolium* plants with flowers and green fruit.

areas. Other signs observed were weakness and incoordination, trembling of the muscles of the back legs, anemia, and accelerated heart rate.

In the few necropsies performed, the most frequently seen lesions were congestion and hemorrhage of internal organs. Often lungs were congested and emphysematous; liver and kidneys were congested; and the heart, intestinal mucosa, and spleen capsule were hemorrhagic and congested. Particularly in Hereford cattle, the fat was frequently golden yellow and contained a gelatinous infiltration. The gallbladders of 2 animals were distended with dark green bile.

Feeding Experiments

In an effort to reproduce clinical signs and lesions similar to those observed in animals with field cases, and to determine the toxicity of silver-leafed nightshade, a series of feeding trials were conducted using various species of animals and various portions of *S. elaeagnifolium* in different stages of maturity (table 1).

Discussion

In general, clinical signs observed in cattle with field cases were duplicated in the feeding trials. Signs of intoxication included salivation, nasal discharge, dyspnea, bloating, trembling, loose feces and, in animals less acutely affected, a yellow discoloration of the fat and lightly pigmented areas of the skin. This particular syndrome has not been reported in Solanum toxicity, although some of these signs have been described.[1,3,4,8] These clinical signs could easily be confused with those of the shipping fever complex. Also, they are similar to those described for organic phosphorus insecticide poisoning.[6]

The toxicity of the ripe fruit of *S. elaeagnifolium* may be as great or greater than that of the green fruit. In cattle, as little as 0.9 Gm. of ripe fruit, per kilogram of body weight, produced clinical signs, whereas 2.0 Gm./kg. of green fruit was required to produce clinical signs in a steer calf.

Although more cattle should be fed in order to make conclusive statements, it is apparent, from these feeding trials, that sheep are not as susceptible to *S. elaeagnifolium* as cattle. Thus, a sheep had mild clinical signs after being fed 6.8 Gm. of green fruit per kilogram of body weight, whereas only 2.0 Gm./kg., gathered at the same time and place, produced clinical signs in a steer calf.

It has been reported[1] that goats may be

relatively unaffected by *S. elaeagnifolium* poisoning, because they are prone to vomiting; however, in these feeding trials, goats received up to 21.4 Gm. single doses of green fruit per kilogram of body weight, without showing clinical signs and without vomiting. Poisoning in goats by *S. elaeagnifolium* has not been observed at this laboratory.

Summary

Silver-leafed nightshade, *Solanum elaeagnifolium*, has been shown to be toxic to cattle and sheep. In grazing cattle, incidents of toxicosis from eating the green plant and the dried fruit have been observed in western Texas. Apparently, ripe fruit is as toxic as green fruit.

Signs of intoxication in animals in the field and in those in experimental feeding trials included dyspnea, salivation, nasal discharge, trembling, weakness, incoordination and, in less acute cases, yellow discoloration of the lightly pigmented areas of the skin. In the field, most animals recovered if they lived more than 2 to 3 days after ingestion of silver-leafed nightshade.

Postmortem lesions observed in animals with naturally occurring and experimentally produced intoxications included congestion and hemorrhages of the internal organs and, in less acute cases, yellowish discoloration of the body fat.

Sheep appeared less susceptible to *S. elaeagnifolium* than cattle. Spanish goats had no signs of intoxication when fed up to 10 times the amount of green fruit that produced intoxication in cattle.

Two rabbits fed *S. elaeagnifolium* were apparently not affected, although 1 died from unknown causes after eating the plant for 15 days.

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First "Instant" Calf Is Born

The first calf sired with reconstituted frozen-dried semen was born April 6 at the University of Maryland.

The technique of drying semen was developed by Dr. H. T. Maryman and E. Kafig at the Naval Medical Research Institute, Bethesda, Md.

The sperm cells, on a piece of nylon gauze, were placed under vacuum until they were frozen by rapid evaporation and the material was dry. For insemination, the dried sperm cells were put back into semen diluter. (In this case, the sperm was used the same day it was processed.)

Successful development of this technique will mean saving the cost of refrigeration of frozen semen during storage, but much research is needed before it can be adapted and used on a routine basis.—*Agric. Leaders' Dig., 41, (June, 1960): 22.*

Corn Cockle, Cockleburs, and Coffee Beans as

Poultry Ration Contaminants

Bert W. BIERER, V.M.D.
W. H. RHODES, B.S.

TOXICITY PROBLEMS due to *Crotalaria spectabilis* and *Crotalaria striata* contamination of complete poultry and livestock rations have been recognized and were reported during 1959.[1] The consciousness of livestock producers, principally poultry producers, regarding toxic seed contamination of complete rations* stimulated a search for other toxic weed seeds in addition to Crotalaria species. Individuals preparing feeds on the farm by mixing and grinding a commercial concentrate with locally grown grains were especially concerned. Small feed producers of this type lack expensive equipment necessary to clean weed seeds from oats, corn, wheat, or other grains, and they must rely upon their alertness and ingenuity to prevent their product from becoming contaminated with toxic weed seeds. As a result of inquiries, feeding trials with corn cockle (*Agrostemma githago*), cockleburs (*Xanthium orientale*), and coffee beans (*Cassia tora*) were instituted.

Corn cockle ground with wheat is supposed to be dangerous as an article of food for man or domesticated animals. Poultry and other animals were reportedly killed when fed screenings composed largely of corn cockle seeds. The chronic poisoning is referred to as "githagism."[6] The ill effects from experimentally feeding corn cockle to poultry have been described in detail.[3,7]

The spiny cocklebur will cause death in baby chicks by mechanical injury or obstruction in the digestive tract.[2] Experiments indicate that ingestion of seedling cocklebur plants in early spring produced poisoning in swine, sheep, and cattle, and that swine were especially susceptible.[4,5] There does not appear to be any reference in the literature relative to the possible ill effects of feeding the mature cockleburs when ground with other grains, and little appears to be known about so-called "coffee beans." The weed seeds mentioned are commonly collected in any grains harvested by a combine, including oats, corn, wheat, and soybeans.

Materials and Methods

If toxic effects were not produced by feeding a poultry ration contaminated with 5 per cent of seeds thought to be toxic, the particular species of weed seeds under trial were considered to have a low order of toxicity and consequently of no commercial significance. Feeding trials were set up (table 1). At the termination of a 5-week period of exposure, all of the birds in all pens were killed for necropsy and for any necessary bacteriologic examination. Seeds were identified by experts at one or more state institutions prior to use. The basal ration was a complete commercial poultry ration. The weed seed to be studied was ground and mixed with the basal ration for 8 minutes.

Results and Discussion

Corn cockle, cockleburs, and coffee beans did not produce any significant ill effects on growth or health of body tissues under the conditions of the experiments. No lesions or changes in the sizes of the internal organs were observed on necropsy. There did appear to be some interference with feed conversion in the groups fed cockleburs and coffee beans, but none in the group fed corn cockle.

Evidence of toxicity was anticipated in the corn cockle trial, and the experiment was set up in order to observe ill effects. Groups fed 1.0 per cent, 0.1 per cent, and 0.01 per cent concentrations of corn cockle seed were maintained to permit toxicity studies. When no evidence of toxicity was detected, seeds from the source used were sent to four additional state institutions

From the South Carolina Agricultural Experiment Station, Clemson, and the Poultry and Livestock Sanitary Departments, Clemson College, Clemson, S. C. Technical contribution No. 331.

*A complete commercial ration designed as an adequate ration without supplementation.

TABLE 1—Results of Feeding Corn Cockle, Cocklebur, and Coffee Bean Weed Seeds to Chickens

Ration	No. chickens	Age (wk.)	Av. body wt. (lb.)	Av.** feed consumption (lb.)	Feed conversion index	Mortality (%)	Feeding period (wk.)
Corn-Cockles 5 per cent*	10	7	2.44	6.26	2.56	0	6
Basal ration**	10	7	2.45	6.69	2.72	0	6
Cocklebur 5 per cent*	10	5	1.48	5.03	3.39	0	5
Coffee Bean 5 per cent*	10	5	1.48	4.68	3.16	0	5
Basal ration**	10	5	1.49	4.35	2.91	10†	5

*Basal ration with a ratio of weed seed to ration of 5:100, by weight. **Basal ration was a complete commercial feed designed as adequate ration without supplementation. †Perosis caused the death of 1 chicken.

for confirmation identification. In all cases, corn cockle seed identification was confirmed.

Summary and Conclusions

1) Under the conditions of these experiments, corn cockle (*Agrostemma githago*) seeds were found to be nontoxic to chickens, indicating that further study may be needed.

2) Under routine methods of preparing complete poultry rations, corn cockle, cockleburs (*Xanthium orientale*), and coffee beans (*Cassia tora*) did not appear to be of any commercial significance.

3) The weed seeds studied in this report, together with Crotalaria species previously studied, constitute some of the principal weed seed grain contaminants.

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Many Dermatophytes Sensitive to Griseofulvin

A number of dermatophytes have been examined for *in vitro* sensitivity to griseofulvin. *Microsporum canis, Microsporum distortum, Microsporum gypseium, Trichophyton mentagrophytes,* and *Trichophyton verrucosum* were all found to be extremely sensitive. The minimum inhibitory concentration of griseofulvin for *Keratinomyces ajelloi* is at least 4 times that of the other dermatophytes tested. The fungistatic effect of griseofulvin is reversible, and its activity is directed toward that part of the mycelium with which it comes in direct contact.—*New Zealand Vet. J., 8, (April, 1960): 23.*

Osteochondrosis

of the Tibial Tuberosity of the Horse

Robert H. BAKER, D.V.M.

THIS REPORT of osteochondrosis of the tibial tuberosity is based on clinical and radiographic examination of 8 Thoroughbred horses in the fall of 1959 and winter of 1960. Osteochondrosis of the tuberosity of the tibia has been reported in young active dogs,[1,2] and in man where it is known as Osgood-Schlatter disease.

In man, the etiology is obscure; however, whether the disease is traumatic in origin is doubtful. Since many of these cases are bilateral, there is evidently some factor other than trauma involved.[2] It generally occurs in male adolescents. Symptoms and clinical signs include swelling and tenderness of the tibial tubercle and pain at this point after strenuous exercise or after kneeling or bumping the tubercle. Radiographic examination shows what appears to be a partial avulsion of the tibial tubercle, with irregularity and hypertrophy of the tubercle, and islets of bone in the cartilage which appear to suggest incomplete separation.

The condition, even with conservative treatment, may persist for a few months or as long as 2 or 3 years.[2]

In man, treatment varies from application of a simple elastic bandage and restrictive activity, to complete bed rest and immobilization with a plaster cast. Operative treatment, which is reserved for severe cases, consists of making a deep incision over the tubercle, followed by drilling a series of holes through the tubercle and into the underlying bone. This procedure is reported to afford prompt relief of symptoms as soon as the operative wound is healed (about 3 weeks).[2]

In the horse, the condition is found primarily in young horses, 1 to 3 years old. The predominant clinical signs are a shortened stride and sliding gait in the affected limb, and frequently "going off" on the toe. There is generally an accompanying myositis in the lumbar and gluteal regions. In some cases, the separation of the tibial tubercle can be palpated, but pain cannot be elicited in all cases by palpation.

The horse generally trots off "dog fashion" with the hip moving away from the affected side or, if the lesion is bilateral, the horse will stride short in both hindlegs. These signs are particularly noticeable after strenuous exercise and they recede slightly with a few days rest. When the horse is standing, he rests the affected limb.

The best diagnostic procedure is radiographic examination. Radiographs of the horse, as in man, show what appears to be a partial avulsion of the tibial tubercle (fig. 1) In the cases reported here, radiographs were taken with 8- by 10-inch cassettes with speed screens and regular screen type film. The radiographs were taken at 30 inches distance with 70 kv.p. and 15 ma./sec. with an exposure time of 2 seconds. The position was lateromedial through the area just below the patella. The top of the cassette was held at a level with the bottom of the patella.

These horses have not been responsive to corticosteroid therapy and only mildly responsive to analgesics, such as phenylbutazone. Successful management has required stall rest or confinement in a small paddock for 3 months. Rest is important because severe exertion might cause a complete avulsion of the tibial tuberosity, or fragmentation of the bone spicules in the area, resulting in loose pieces of bone beneath the patellar ligaments.

In 3 horses, subcutaneous injection of Lugol's solution or iodine oil solution over the affected area was employed in conjunction with confinement. This treatment appeared to hasten recovery.

Pathogenesis can be observed by periodic radiographic examination. The decision to

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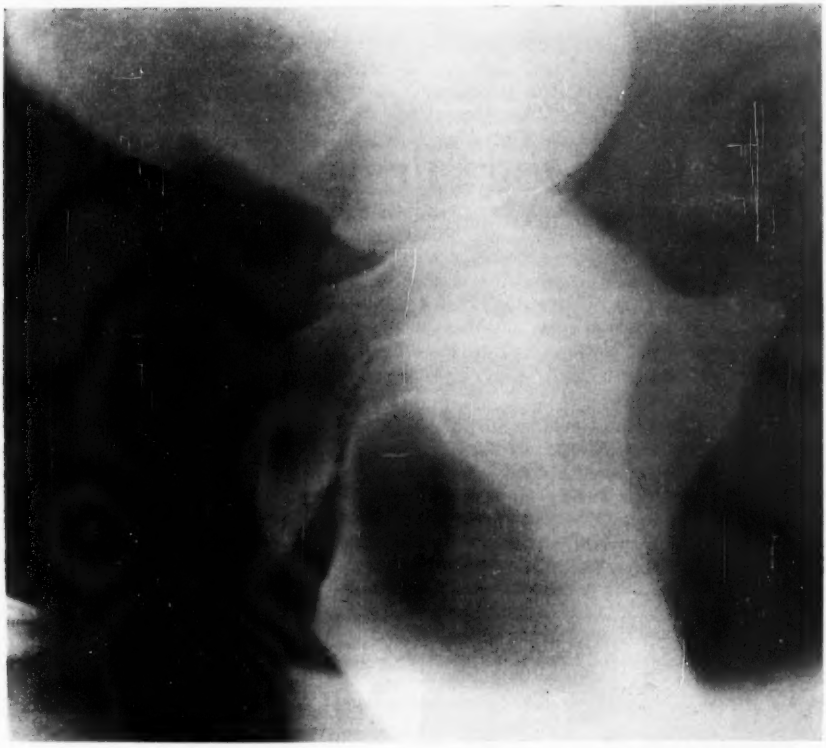

Fig. 1—Radiograph is of the left stifle joint of a filly, 2 years old, that showed a short, sliding gait in the left hindleg for 4 days prior to examination. Osteochondrosis of the tibial tuberosity appears as a partial avulsion.

return the horse to work is based on the findings shown in these radiographs.

In the past, osteochondrosis of the tibial tuberosity has been misdiagnosed as obscure stifle lameness, trochanteric bursitis, or as fracture of the fibula. It is hoped that the observations reported here will aid others in minimizing these misdiagnoses.

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Detection of *Leptospira pomona* in Urine with Fluorescein-labeled Antibody

Leptospira pomona was demonstrated in the urine and kidneys of experimentally infected guinea pigs and calves by fluorescein-labeled antibody. The technique proved better than dark-field microscopy and has certain advantages over cultural and serologic detection methods.—*J. Infect. Dis., 105, (1959): 118-120; abstr. 650 in Vet. Bull., 1960.*

The United States Air Force

Sentry Dog Training Center

Lackland Air Force Base, Texas

Robert W. BAILEY, D.V.M., M.P.H.

DOGS, PRINCIPALLY of the German Shepherd Dog breed, are being extensively used at United States Air Force and Army installations to assure the safety of defense items and weapons systems. Sentry-dog teams, consisting of specially trained dogs and their handlers, are used in these important places because of their proved ability to detect and apprehend intruders, to deter aimless trespassing in security areas and, given the proper conditions, to replace up to 5 men working in the same area.

Fig. 1—Elevated house for sentry dog provides shade. Single post foundation affords a run area of 113 sq. ft. using a 6-ft. restraining chain.

The German Shepherd Dog's constitution, ability to adapt to varying climatic conditions, and temperament have been found to be ideal qualities for dogs involved in this work. Training of these dogs consists principally of teaching absolute obedience to a single handler and of enhancing the dog's natural tendency toward aggressiveness and protectiveness. An ideal sentry dog is well mannered and obedient; suspicious of all persons other than his handler; in excellent physical condition with well-developed and extraordinarily keen senses; and fiercely loyal to his master. There are records of sentry dogs alerting their handlers to intruders at distances up to 500 yards, apprehending over 50 "catches," and repeatedly demonstrating ability to detect trained "penetrators" during practice alerts in areas secured by sentry-dog teams.

Typically, the average canine graduate of the USAF Sentry Dog Training Center is a male German Shepherd Dog weighing approximately 70 lb. He is 24 inches tall at the withers and about 20 months old. He usually comes from a city or suburban home which has proved too small for him. After approximately 2 weeks of processing and 8 weeks of training with his handler at the Center, a graduate man-dog team will go to some USAF or U.S. Army installation.

The posts which these teams cover most effectively are those which require night patrol in isolated areas where there is little or no traffic and where the patrol area is so planned as to be downwind from the area to be secured. Used in this manner, the sentry dog and his handler have proved to be one of the most effective security devices known.

Sentry dogs have been used to guard USAF installations in Europe and the Far East since 1952 and in the United States in increasing numbers since 1954. Centers for the training of these dogs were established in Germany and Japan, using native German Shepherd Dogs and native professional trainers. In the United States, USAF sentry dogs and their handlers were trained at the Army Dog Training Center, Fort Carson, Colo., from 1954 until training op-

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This paper represents the personal viewpoint of the author and is not to be construed as a statement of official Air Force policy.

erations were suspended at this installation in June, 1957.

Even though operations at Fort Carson had been suspended, USAF plans at this time called for continued and expanded use of dogs in guarding dispersed elements of "high security" category, including new missile sites. An Air Force Sentry Dog Training Center was eventually established at Lackland Air Force Base, Texas, and the first dog was received for training on Aug. 21, 1958. Since that time through March 1, 1960, a total of 1,301 dogs have been received at Lackland, and approximately 600 dog-man teams have been graduated and shipped to USAF or Army installations for duty.

The average "on board" strength at the Sentry Dog Center has been approximately 160 dogs. Of this number, there are usually 120 in training at a given time, with 30 dogs and their handlers entering the 8-week training course every 2 weeks. The balance of the dog population includes those undergoing processing or awaiting training, and rejected dogs awaiting return to their owners.

Procurement of Dogs

Procurement of sentry dogs is an unusual process and is the basis for several significant problems in the operation of the Center. All matters relating to sentry dog procurement are handled by the Remount Section, Office of the Quartermaster General, Headquarters, U.S. Army, Washington 25, D.C. Any inquiries having to do with the donation or sale of potential sentry dogs are channeled eventually to this office, which responds by forwarding application forms, specification data, and instructions. Included in these papers is an outline to be used by the local veterinarian in his physical examination of the candidate, a most important step in determining compliance with specifications. Upon completion, these forms are returned to the Remount Section for review. If no disqualifying defects have been noted and the price is acceptable, a shipping crate with instructions for shipment of the dog via railway express to Lackland is forwarded to the owner. All transportation costs are paid by the government.

The procurement process is completed when the dog arrives at Lackland. At this time, the dog is accepted or rejected on the basis of an examination for acceptable temperament and physical qualifications. If the animal is found to be qualified in all respects, the owner is paid and the dog is entered in the next training class with an assigned student handler. The examination and physical processing period is the equivalent of a quarantine period, during which the dog is vaccinated against canine distemper, canine infectious hepatitis, leptospirosis, and rabies, and is given an opportunity to adjust to his new environment.

Bases for Rejection

Approximately half the dogs which arrive at Lackland are found to be unacceptable, for a variety of reasons. The leading cause of rejection has been temperament qualities which are not adaptable to the training program. Dogs in this category include those which are "gun-shy" and cowardly, and those which are completely lacking in aggressiveness or are overly aggressive. About half of the rejected animals are disqualified for these reasons. The remainder have some disqualifying physical condition. Leading these causes is hip dysplasia, a convenient grouping for various aspects of abnormal development or pathology of the coxofemoral joint. These conditions are diagnosed by radiographic examination of the pelvic region while the dog is under anesthesia. We have found varying degrees of this condition, including complete bilateral luxation, in approximately 20 per cent of the radiographs taken.

This is probably not a true picture of incidence of this condition in German Shepherd Dogs, since the figure is biased by the fact that all of these animals have had a physical examination by a civilian veterinarian before shipment to Lackland. While radiographs are not required as a part of this examination, examiners are enjoined to observe dogs for clinical evidence of this condition. We assume that some animals are screened before shipment to the center. The position which is used for this radiography is dorsoventral, with the femurs rotated so that the femoral necks may be visualized in profile. Thus far, 163 dogs have been found severely enough affected by this condition to be rejected.

The second most common cause for medical rejection is dirofilariasis. Using Knott's concentration technique, microfilaria of

Dirofilaria immitis have been found in 49 dogs since the program was instituted. Every known diagnostic technique for the differentiation of this larvae from that of Dipetalonema species is used, including measurement, observation of the peculiar motility characteristics of the 2 species, and morphology. Since infection with Dipetalonema filarids is apparently of no medical importance, 8 dogs with this parasite have been accepted.

Other miscellaneous conditions for which dogs have been rejected include deafness, unsound teeth, chronic skin disease, and undersize. Following rejection for any reason, the dogs are returned to their owners at the government's expense.

Kennel Construction

This large colony of dogs in a fairly well-controlled environment has provided an unparalleled opportunity for making certain observations on kennel construction, management, and nutrition.

The high rejection rate, coupled with an increased requirement for trained dogs to meet defense needs, has made it necessary to expand our facilities beyond the original 130 permanent kennels. Development of an inexpensive "temporary" kennel which took into account climatic factors in the San Antonio, Texas, area was mandatory and resulted in construction of 80 specially designed kennels (fig. 1).

Each doghouse, elevated upon a single post, provides shade which is essential in this climate. The single post allows the dog the freedom of a full circle for his exercise area. When a 6-foot kennel chain is employed, a run area of approximately 113 sq. ft. is accomplished. This kennel provides more comfort for the dog and greater ease of management for kennel personnel than concrete permanent kennels, dimensions of which are 8 by 3 ft., or 24 sq. ft. Dogs in the larger, circular run have proved less prone to fecal contamination than those confined to the smaller run and are, consequently, more free of feces-borne diseases. The circular runs are covered with 4 to 6 inches of pea gravel, and regular policing of these areas, along with exposure to the elements, apparently adequately controls helminth and protozoan parasites.

Since the population of the dog center is largely transient, another step is taken to facilitate destruction of parasite ova and cysts. This consists of thoroughly soaking the gravelled runs with a saturated solution of sodium chloride after moving a dog from the kennel. On the other hand, coccidiosis, caused by a variety of species, has been a continuous and serious problem in the dogs kenneled in smaller runs. The disease is fostered by autocontamination with feces in the concrete runs which are porous and continuously damp. Along with treatment of animals with clinical infections with sulfaquinoxaline and other coccidiostats, one effective means of treatment has been simply to move the dog from concrete to gravel.

Nutritional Requirements

The combination of strenuous training, severe climatic conditions, and an environment which provides little rest for dogs poses a considerable challenge with respect to nutritional requirements. Proper nutrition is basic to both maintenance and performance under these conditions and controlled studies of various diets and feeding methods have yielded meaningful results.

After a series of several well-controlled comparison tests, it was determined that "ad-lib" or "self-feeding" of dry commercial dog foods was the method which best provided adequate nutrition for dogs kenneled under our conditions. Further, this method has proved so economical with material and manpower that it accounts for important savings. Apparently, continuous access to dry dog foods of high quality more nearly supplies the caloric and nutritional requirements of working dogs than does once-or-twice-a-day feeding of kitchen-mixed foods, with far less waste. We have observed that the dog establishes his own requirement for food, in accordance with work performed, temperament, and environmental stresses. In our studies, we found that the average, 70-lb. adult German Shepherd Dog, during 8 weeks of hard training, ate an average of 1½ lb. of a high quality dry dog food during hot weather, if provided free access to it. During the winter time, the same size dog ate nearly 2 lb. of the same food. Using weight gains, work performance, hair coat gloss, hematocrit values, and relative incidence of noninfectious enteric upsets as comparison criteria, the "ad-lib" feeding method appeared to be vastly superior to that of kitchen-mixing dry food with water and fresh or canned

meat. There have been no obesity problems and no indications of any nutritional deficiencies since the program was begun. Fewer than 1 per cent of dogs in this program have refused to eat.

Conclusion

Providing adequate security for our country's defenses is a task of paramount importance. Sentry dogs and their handlers are making an important contribution to the provision of this security. The veterinarians of the United States have an opportunity to enhance the effectiveness of this program through their support. By providing careful examination and selection of dog candidates for this duty, they can do much to reduce costs and to provide the program with healthy, sturdy dogs, fully qualified in every way to guard our country's defenses. The continued support and cooperation of American veterinarians, through both publicizing among their clientele the need for these dogs and the careful selection of candidates, are of the greatest importance.

Hip Dysplasia Disqualifies Samoyeds for Breeding

The following resolution was unanimously approved March 12, 1960, by the Samoyed Association of Great Britain: All breeding stock should be immediately radiographed and no dogs or bitches having the slighest evidence of hip dysplasia will be used for breeding purposes. A list of breeders who are prepared to consider soundness, longevity, and happy lives of the dogs which they sell, by guaranteeing all breeding stock to have been radiographed, will be circulated to all members and prospective buyers in England and overseas.—*Dogs in Canada, 50, (May, 1960): 7.*

Danger of Intra-Articular Corticoid Injection

In the treatment of painful diseases of joints and bursae, intra-articular injection of hydrocortisone acetate or its analogues may induce septic arthritis. Infection may be introduced directly into the synovial cavity by the procedure, or injection may be made into an already septic joint. Prolonged discomfort, permanent disability and, occasionally, death may result.

Infection can be avoided by: (1) careful consideration of differential diagnosis, (2) appropriate synovial fluid studies, (3) adequate x-ray examination, and (4) rigid surgical aseptic techniques.—*Mod. Med., 28, (1960): 80.*

Collapse of the Larynx and Adjacent Structures in the Dog

Harmon C. LEONARD, D.V.M.

LARYNGEAL problems occur in dogs which do not occur in man because (1) selective breeding has resulted in abnormal anatomical changes of structures in the larynx and adjacent region; and (2) because the dog's primary method of body ventilation is through respiration rather than perspiration, greater stress is exerted on the larynx.

Collapse of the larynx is caused by excessive negative pressure or a partial vacuum which occurs in the upper respiratory system of the brachycephalic dog. This partial vacuum is present on inspiration and is due to stenotic nares,[3] elongation of the soft palate, or both.

When first described, an eversion of the lateral ventricles[2] was thought to be an entity in itself. Further investigation indicates that it is probably the first stage in the pathogenesis of laryngeal collapse. Dogs with stenotic nares frequently are mouth breathers. When elongation of the soft palate is present in brachycephalic dogs, the soft palate is drawn down into the lumen of the larynx upon inspiration. This makes inspiration difficult and increases the negative pressure in the larynx. This inspirational sucking of the soft palate into the larynx is the cause of the stenotic or snoring sound frequently observed in brachycephalic dogs.

Over an extended period, the larynx will undergo changes in response to negative pressure stress. The place of least resistance in the wall of the larynx is the soft mucosal lining of the lateral ventricles and they evert under conditions of negative pressure (fig. 1). With the everted ventricles adding their mass to the already partially occluded respiratory tract, the negative pressure upon inspiration is further increased.

The second stage of a laryngeal collapse occurs when the next weakest areas of the larynx succumb to the increased stress. These are the cuneiform tubercles of the aryetenoid cartilage (fig. 2). In normal function, they serve as wings to the laryngeal orifice (fig. 3) and dilate the medial part of the larynx on inhalation. In advanced cases, during increased respiratory stress (as in excitement and on hot humid days), these cuneiform tubercles will lose their rigidity and they too are drawn into the laryngeal lumen (fig. 4) causing added obstruction.

Fig. 1—Eversion of lateral ventricles of the larynx of a dog.

The third stage occurs with the folding or collapse of the corniculate tubercle of the aryetenoid cartilage (fig. 2). The corniculate tubercle of the aryetenoid cartilage functions to establish the dorsal arch of the inspiring laryngeal orifice. Its col-

Dr. Leonard is a general practitioner in Cheshire, Conn.

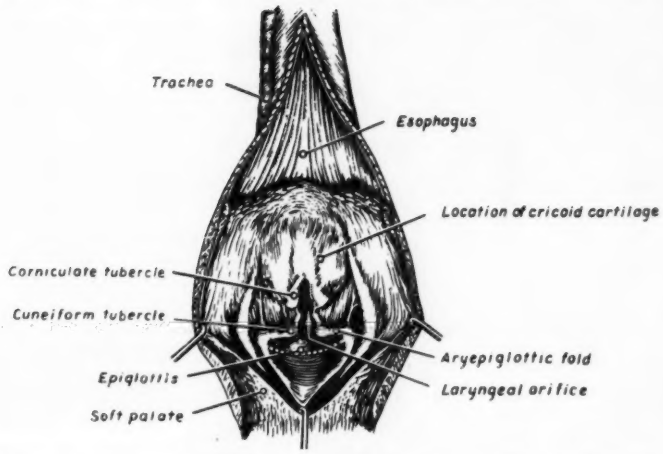

Fig. 2—Diagram showing anatomical structures of the larynx of a dog.

lapse is often fatal and frequently is seen in dogs with heat prostration.

In diagnosing various problems of respiratory distress, with the exception of stenotic nares, it is impossible to give an objective examination of the upper respiratory system without general anesthesia. Two important points should be considered. First, dogs with respiratory problems are frequently questionable anesthetic risks and should be approached with caution and adequate preanesthetic preparation in the nature of additional help, adequate equipment, and the availability of supplementary oxygen supply. Second, so that there be no duplication of the anesthetic risk, preparation should be made to make necessary surgical correction at the time of the examination.

Surgical Correction

In preparation for surgical correction, each patient must be considered individually. Before laryngeal surgery is attempted, it is necessary to correct the conditions which were responsible for the laryngeal deviation, e.g., the correction of the stenotic nares—amputation of the soft palate.

For anesthesia, a short-term intravenous anesthetic is best. The dog is placed in sternal recumbency and a mouth speculum inserted. The tongue is depressed and the epiglottis is pulled slightly forward in a rostral direction. Distortion of the laryngeal appearance will occur if the epiglottis is pulled too far forward.

The procedure for correction of the stenotic nares has been described.[3]

A simple method of amputation of the soft palate lies in the application of 2 curved hemostats meeting in an arch demarking the amount of soft palate to be removed. Then, by use of a cautery or elec-

Fig. 3—Normal tracheal orifice.

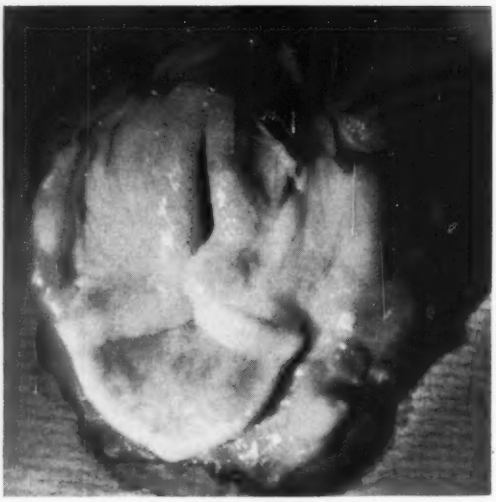

Fig. 4—Collapsed cuneiform process of trachea.

tric scapel, that part caudad to the forceps is amputated. The amount of soft palate to be removed can be determined by using the epiglottis as a measure. All of the soft palate covered by the epiglottis when elevated with forceps should be removed.

If the ventricular linings are everted, they may be simply amputated by use of long-handled, sharply pointed scissors. Hemorrhage is minimal. Considerable respiratory relief is afforded by these procedures.

If at this time, the second or third stage of laryngeal collapse is present, further surgery should be postponed and may possibly be completely avoided. The folding of the cuneiform and corniculate tubercles may be transitory in nature, and by correcting the primary factors, many will rectify themselves. The surgeon may elect to forego further surgery at this time and examination of the dog 1 month later will indicate whether there is a need for further laryngeal correction. Of 13 dogs with complete laryngeal collapse, 7 have responded to removal of the soft palate, the lateral ventricles, or surgery on the nares; 6 required further correction that is described here.

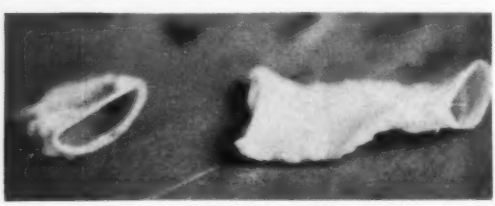

Fig. 5—Collapsed trachea of a dog.

The mucosa surrounding the cuneiform and corniculate tubercles is very vascular. Surgery involving these structures is accompanied by considerable hemorrhage. Consequently, it is important to have in place a cuffed endotrachael tube. The mucosa surrounding the cuneiform tubercle is then infiltrated with a 1:10,000 solution of epinephrine. The corniculate tubercles are amputated bilaterally with sharp scissors. Adrenalin-saturated tampons control hemorrhage following removal.

In 2 dogs, a Boxer and a Pug, it has been necessary to do only a unilateral amputation of the corniculate tubercle of the aryetenoid cartilage. Here, the same procedure was utilized and hemorrhage was controlled by adrenalin infiltration and tampons. The corniculate tubercle that was collapsing on inspiration was grasped with forceps and removed.

Of the 6 dogs that required surgery for complete laryngeal collapse, only 1, a Boston Terrier, 5 years old, did not respond. In this dog, the entire base of the aryetenoid cartilage collapsed.

Following laryngeal or pharyngeal surgery, the swallowing processes are accompanied by some difficulty for 24 to 48 hours. We have found that intravenous administration of electrolytic fluids following surgery and at 12-hour intervals, to keep the patient hydrated, will greatly reduce postoperative problems of drinking. Also, as the effects of the anesthetic dissipate, intramuscular injection of tranquilizers will be helpful in keeping the patient quiet.

Reports of 2 closely associated problems are described.

Collapse of the Epiglottis

A Beagle, 5 years old, had severe inspirational distress. Examination made under anesthesia revealed that the epiglottis collapsed or folded over the laryngeal lumen upon inspiration. No other laryngeal or pharyngeal disorder was observed. Two thirds of the free border of the epiglottis was removed. Hemorrhage was slight (fig. 2).

The process of deglutition of food was

Fig. 6—Radiograph of cervical area (lateral view) of a Pomeranian with tracheal collapse.

not impaired. As long as the basal one third of the epiglottis remains intact, normal physiologic function of the larynx also remains.[1] The dog experienced marked respiratory relief. The cause was not determined, but it was probably of traumatic origin.

Collapse of the Trachea

A Pomeranian, 7 years old, had increasing respiratory distress over several months. On examination of the larynx and pharynx, no gross pathologic changes were seen. Death occurred several days after examination. On necropsy, a complete tracheal collapse was diagnosed (fig. 5). The cause was not determined, but it was probably congenital in origin.

In another case, a male Pomeranian, 5 years old, had had increased respiratory distress for 5 months. On examination by palpation, a lack of rigidity and form of the trachea was noticed. Diagnosis was confirmed by radiography (fig. 6).

Summary

Indications are that problems of respiratory distress in brachycephalic dogs resulting in laryngeal collapse are progressive in nature, and that they are caused by stenotic nares or elongated soft palate. Corrective surgery was successful in 13 cases.

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[1]Kirchner, John, New Haven, Conn.: Personal communication, 1959.

[2]Leonard, Harmon C.: Eversion of the Lateral Ventricles of the Larynx in Dogs—Five Cases. J.A.V.M.A., 131, (July 15, 1957): 83-84.

[3]Leonard, Harmon C.: Surgical Relief for Stenotic Nares in a Dog. J.A.V.M.A., 128, (June 1, 1956): 530.

Treatment of *Filaroides osleri* Infection with Cyanacethydrazide

Coughing due to *Filaroides osleri* was successfully treated in 6 Boxer dogs by administering 1 Gm./10 lb. of body weight of cyanacethydrazide for varying periods. Nodules caused by the parasite were found in clinically healthy dogs.—*J. South African Vet. Med. A., 30, (1959): 27; abstr. 484, in Vet. Bull., Feb., 1960.*

Pet Bird Practice

Robert M. STONE, D.V.M.

PET BIRDS, particularly parakeets and canaries, have become an increasing segment of many small animal practices. Between March, 1957, and June, 1958, there were 528 pet birds presented for treatment at our hospital. By enlarging pet bird practice, veterinarians have an opportunity to provide a needed service as well as increase their practice revenue.

In the following article, I have tried to incorporate information I have gleaned from scientific and other literature and from personal experience. Greatest detail is given to conditions encountered most often.

Bird Care

Housing.—The cage should be cleaned with a quaternary ammonium solution once a week, and the paper and gravel should be changed daily. Paints which contain lead should not be used on the cages.

Temperature.—A normal bird is most comfortable at 65 to 75 F.; however, most can tolerate temperatures slightly above or below this range. It is important to protect a bird from drafts, since they can have a deleterious effect.

Protective Cover.—Many birds will let the owner know that they want to be covered by demonstrating a certain specific action, such as a sound or movement. Besides quieting and settling the bird for the night, covering the cage at the same time each day keeps the amount of light and darkness the same, minimizing feather disorders.[14]

Perches.—Fine sandpaper should be used to clean perches. It is best to vary the size of the perches, since this permits better exercise of the limbs. The simplest way to achieve varied sizes is to cut a sturdy twig the proper length, and notch the ends.

Feed.—For a canary, the normal maintenance diet should consist of equal parts canary seed and rapeseed.[1] Supplements of fresh greens, hard-boiled eggs, and special stimulating and conditioning foods may be added.

For a parakeet, a mixture of canary seeds, millet seeds, and steel-cut oats should be fed in a ration of 3:1:1 for young birds, and 1:2:1 for adults. Some recommend equal parts canary and millet seed, and 10 per cent hulled oats.[10] All seed used should be of high germination value. Greens which are clean and have not been frosted may be added. Some good supplements are celery tops, carrots, carrot tops, dandelion plants, seedling grasses, and lawn clippings.

For a parrot, sunflower seed with additional vitamin A is usually sufficient as a diet. Meat and bones are considerd detrimental, although some do not consider meat harmful.[11] Other foods frequently fed are kemp, canary seed, millet seed, chick starter, or chick laying mash.

Grit.—It is essential to have grit present at all times. This is of vital importance in proper preparation of the food for digestion. Since many of the brand name grits are lacking in calcium, phosphorus, salt, and other trace minerals, they should be added by the owner. Pulverized eggshell and 1 per cent iodized table salt will help balance the grit supplement. For parrots, cuttlebone or ground oyster shell may be used to supply calcium.

Vitamins.—Commercial vitamins* available as powders and tablets are sprinkled over the seed, while liquids are dropped directly into the mouth or added to the drinking water.

Iodine.—One or 2 drops of Lugol's solution should be added to the drinking water twice a week as an iodine supplement.

Water.—Fresh water should be made

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*For parakeets, Petonic, Upjohn Co., Kalamazoo, Mich.; Caminal-S, Armour Veterinary Lab., Kankakee, Ill.; Vi-Daylin, Abbott Lab., North Chicago, Ill.; for parrots, Vita-King, Abbott Lab., North Chicago, Ill.

available daily. Tap water should suffice under all conditions. Boiled or distilled water is unnecessary.

Baths.—Since some birds dislike a bath, it is best to let each bird decide for himself by giving him access to slow running water from a faucet. One should be especially careful in the winter to prevent drafts from reaching the bird when it takes a bath.

Trimming the Beak and Nails.—The beak can be clipped with a nail trimmer** or a dental drill and grinding disk. If the beak is cut too short and bleeds, cauterize it with a silver nitrate stick. Nippers to cut the beak and the lower nib have been used.[7] If the beak is cracked, it can be united with silver wire. The toenails are shortened best with the use of suture scissors.

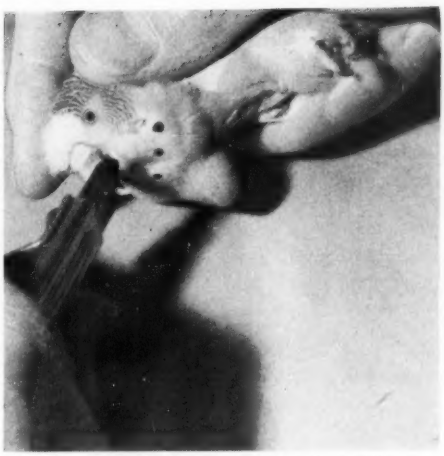

Fig. 1—Position for trimming the beak.

Disease Conditions

The following list of disease conditions is arranged in order of frequency as experienced in our practice. It differs from many lists compiled by others.[2,3]

Abnormal Growths.—Growths, according to their anatomical location, are classified as intra-abdominal or extra-abdominal.

Intra-abdominal masses are usually cystic, involving an ovary, or a mesothelioma or adenocarcinoma involving the kidney. They are manifested by distention and displacement of the abdominal contents, flicking of the tail, debilitation, anorexia, irregular consistency of evacuations, malaise and, at times, limb paralysis. Although several attempts have been made to remove these masses surgically, most patients died during or immediately after surgical removal. The remainder usually died within 72 hours. When an intra-abdominal mass is diagnosed, I advise euthanasia.

Fig. 2—Abdominal distention due to adenocarcinoma of the kidney.

The extra-abdominal masses vary in type and location. Lipomas are usually bilateral masses which occur in the area of the breast. Recurrences are infrequent. Extremely heavy birds should be placed on a reducing diet (*see* discussion on obesity). Many times the fatty deposits on the breast will regress and surgery can be avoided. Adenocarcinomas and xanthomas occur on all areas of the body, but primarily on the breast in a unilateral position. Adenocarcinomas recur in about 10 per cent of the cases, whereas xanthomas rarely

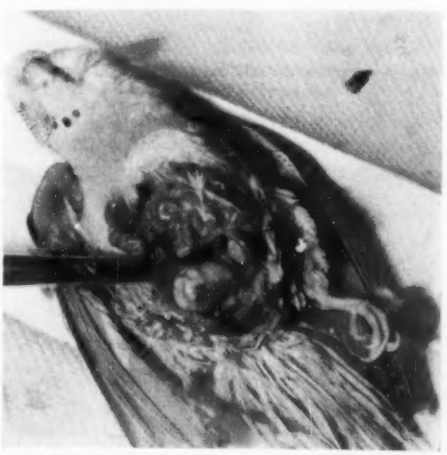

Fig. 3—Adenocarcinoma of the kidney.

**Resco nail trimmer, Resco Co., Detroit, Mich.

Fig. 4—Adenocarcinoma of the kidney.

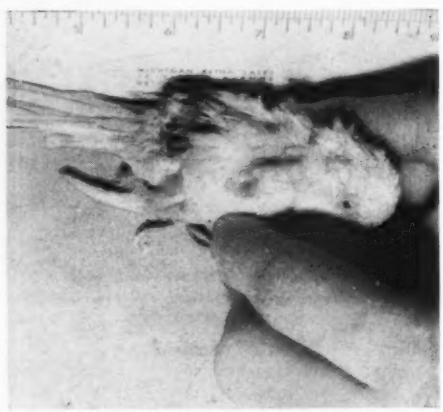

Fig. 5—Squamous cell carcinoma located on dorsal surface at the tailhead.

Fig. 6—Neurosarcoma involving the entire limb.

recur. Squamous cell carcinomas are usually found dorsally on the tailhead, and recurrence is common. About 90 per cent of the time neurosarcomas are located in the neck and the muscular tissue of the thigh; fibrosarcomas have been found only in the region of the neck. Another investigator found that neurosarcomas and fibrosarcomas usually occur on the wing or thigh. Both of these types have recurred 100 per cent of the time.

Horny growths may involve the base of the beak and the extremities of the cere. We remove or reduce the growths with a scalpel blade. There is no discomfort or objection on the part of the patient, and no anesthesia is needed.

To remove warts, or small pedunculated growths, at the angle of the mouth, infiltrate at the base with the injectable form of an antihistamine and snip off at the base with a scissors. Hemorrhage is controlled with a silver nitrate cautery stick. No aftercare is necessary.

Postorbital masses are diagnosed by the swelling and erythema of surrounding ocular tissues. The nictitating membrane is elevated and covers the affected eye. Histologic sections have shown the masses to be lipomas. Some cases of exophthalmos with blindness, polydipsia, and obesity may be due to pituitary neoplasms.

Dermal cysts can be found in almost any region of the body and in many shapes. They usually occur on the wings. Some[4] suggest applying phenol after removing the cyst and its lining, but in my experience unfavorable results may follow use of phenol. On many occasions, the patient has developed slow-healing and extensive burns at the treated area.

In one case, removal of a growth on the leg of a canary proved, on histopathologic examination, to be a canary pox lesion.

Equipment for removal of a mass includes mosquito forceps, No. 7 Bard-Parker handle, No. 15 Bard-Parker blade, taper point straight needle, No. 60 cotton suture, balance calibrated in grams, general anesthetic,* cardboard collar, adhesive tape, quaternary ammonium solution, small rat tooth forceps, small scissors, iris scissors, gauze sponges, tuberculin syringe, 25-gauge, ¼-inch needle, and a binocular loop.

*Sedax, Detroit Veterinary Supply Co., Detroit, Mich. contains chloral hydrate (164 gr.), sodium pentobarbital (3.5 gr.), magnesium sulfate (82 gr.), alcohol (9½% V/V in each 250 cc.) in a propylene glycol vehicle.

Although there are several procedures[9,13] for anesthetizing birds, the following is the most successful procedure in my experience.

The weight of the bird in grams is multiplied by the factor 0.002 cc. for debilitated birds, and 0.0025 cc. for good surgical risks.[12]

Example: Bird's weight x factor for debilitated bird = cc. of anesthetic required.
40 Gr. x 0.002 cc. = 0.08 cc. of anesthetic.

The anesthetic is injected 3/16 inch deep into the breast muscle.

Two or 3 minutes after administering the anesthetic, feathers are removed from the surgical area which is washed with cotton soaked in quaternary ammonium solution. The skin is grasped over the least vascular and most prominent portion of the tumor and incised with a scalpel. The incision is extended with a scissors.

Hemorrhaging vessels are clamped with mosquito forceps and ligated with cotton suture. The mass is loosened by blunt dissection with the Bard-Parker handle. Excessive skin is trimmed with scissors. An antibiotic ointment is instilled into the incision, the skin is closed with interrupted cotton sutures, and a cardboard restraint collar is applied. The patient is sent home confined to his cage and returned in 1 week for examination and suture removal.

Gastroenteritis.—Noninfectious causes of gastroenteritis include improper seed mixture, inferior quality of seeds, spoiled greens, poor quality or inadequate grit, lack of fresh water, improper nutrition, taking young birds from parents before they are able to husk seeds themselves, and excitement from too much handling or from being in a strange environment. Infectious causes include Salmonella, Pasteurella, Miyagawanella, and Coccidia[16] (Isospora sp.) organisms.

Clinical signs of gastroenteritis are fluffed feathers, sleeping perched on both legs constantly, anorexia, refusal to talk, refusal to leave cage, and cachexia; specific clinical signs include caking or occlusion of the cloaca, voluminous intake of grit, copious water intake, and soft stools that are green and contain large amounts of water.

Because of inadequate histories in most cases, it is prudent to treat gastroenteritis as an infectious disease.

Mix a teaspoon of chloramphenicol liquid,* ¼ teaspoon neomycin powder,** and 1 teaspoon of kaolin-pectin-sulfonamide mixture,† and administer 2 drops initially, then 1 drop every 4 hours.

Fig. 7—Materials and equipment used for surgical procedures.

For those clients who cannot handle patients, an alternative is to give the bird a sulfamethazine solution‡ with a teaspoon of neomycin powder in it as drinking water for 4 days.

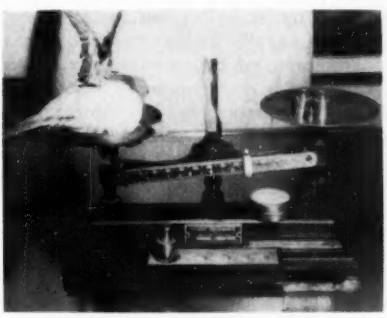

Fig. 8—Weighing the patient. A balance calibrated in grams is recommended.

Another addition could be one crushed tablet containing a viable mixed culture of *Lactobacillus acidophilus* and *bulgaricus*§ on the feed daily for 7 days.

Respiratory Infections.—Respiratory dis-

*Chloromycetin Palminate, Parke, Davis & Co., Detroit, Mich.

**Biosol, Upjohn Co., Kalamazoo, Mich.

†V-Pektamalt, Warren-Teed Co., Columbus, Ohio.

‡Sulmet, American Cyanamid Co., Pearl River, N. Y.

§Lactinex, Hynson, Westcott & Dunning, Baltimore 1, Md.

Fig. 9—Position of patient for surgery as held by an assistant.

eases are due to many factors, *i.e.*, chills, drafts, staphylococci, and viruses.

Clinical signs vary according to the severity of the disease: (1) rhinitis—the mildest form of respiratory disease, characterized by sneezing and coughing; (2) sinusitis—usually an extension of rhinitis and accompanied by sneezing, mucous discharge, and depression; (3) bronchial catarrh—characterized by anorexia, serous nasal discharge, and depression; (4) pneumonia—is the most serious form of respiratory disease, with abdominal breathing, bobbing of the tail, spreading of the wings away from the body, and severe depression.

Many times there is an extension of the respiratory condition which develops into chronic air sac infection or an asthmatic condition. The patient develops an intermittent, and at times a constant, chirping sound. Another complication is air sac rupture, which permits air to escape subcutaneously, causing emphysema. To correct this emphysema, create a fistula in the skin by surgery.

The cage, perches, and feeding dishes should be cleaned with an antiseptic and then rinsed thoroughly. The patient should be confined to the cage and protected from drafts. Environmental temperature is maintained between 80 and 90 F. by placing a heating pad over the cage or placing a light bulb next to the cage. A broad-spectrum antibiotic should be given—1 or 2 mg. 4 times a day for 4 days, or a 250-mg. capsule dissolved in 4 oz. of drinking water for 4 days. A steam inhalator can be used to advantage for patients with dyspnea for 30 to 60 minutes at a time 6 to 8 times a day. Oral medication of equal parts Karo syrup, skim milk, and water may be given in a dose of 2 to 3 drops 4 times a day. For the chronic asthmatic or "cheeper," give 1/5 mg. (2 drops) of prednisolone 2 times a day. This medication is prepared by crushing a 2.5-mg. tablet in 25 drops of water.

If the discharge in the nostrils of birds with sinusitis is cheesy, remove it with a toothpick, and instill ophthalmic antibiotic ointment 3 or 4 times daily. One condition of chronic sinusitis in a parrot was treated successfully with the local application of streptokinase-streptodornase solution* and chloramphenical** locally and orally. An extension of sinusitis can result in a staphylococcic periocular infection or abscess. Treatment involves lancing the area, removing exudate, and applying antibiotics locally and systemically.

Fractures.—The two most important considerations involved in the repair of avian fractures are early treatment and immobilization of the fracture site.

For wing fractures, tape the wing to the body in the normal position, permitting free motion of the unaffected wing. By so doing, the chances of impairing the patient's breathing are lessened. The tape is torn in Y-shaped pieces, the base of the Y encompassing the fractured wing and the other portions passing under and on both sides of the normal wing.

For a leg fracture distal to the femorotibial articulation, immobilize the leg by placing the fracture in a piece of split polyethylene tubing† which then may be taped together. The leg is also taped above and below the tubing for ¼ inch. When the fracture occurs above the femorotibial articulation, larger rubber tubing is used. This is split and trimmed on one end so that it takes the shape of a cone. It is taped over the fracture site.

The client is instructed to keep the patient confined to the cage for 7 days, and then return it for removal of the splint and examination of callus formation. If

*Varidase, American Cyanamid Co., Pearl River, N. Y.

**Chloromycetin Palmitate, Parke, Davis & Co., Detroit, Mich.

†Venopak, Abbott Laboratories, North Chicago, Ill.

necessary, the cast is reapplied and the procedure is repeated in 1 week.

If necessary, a cardboard restraint collar is used to prevent the patient from picking at the tape.

The results of treating birds for fractures are usually satisfactory; a large percentage regain complete use of the affected limb.

Feather Disorders and Dermatitis.—Poor nutrition, hormonal imbalance, mites, lice, boredom, and nervousness are the most common causes of feather disorders and dermatitis. Loss of feathers, skin irritation, unthriftiness, and loss of weight are the most common clinical signs.

Depending on the cause, the following treatment procedures should be followed as indicated: (1) local application of antibiotic ointments such as neomycin-polymyxin B-bacitracin preparation with or without a steroid;* (2) exposure of the patient to an ultraviolet light from a distance of 3 ft. for 1 minute, twice a day, for 30 days;[8] (3) daily application ¼ gr. of thyroid powder on the feed, for oral ingestion; (4) addition of a vitamin preparation** or pediatric drops† diluted to half strength and administered 1 drop, 2 times a day; (5) addition of 25 mg. of diphenhydramine hydrochloride‡ to the drinking water daily; (6) 1 drop of Lugol's solution added to drinking water daily for 1 week, and then administered twice a week; (7) application of a cardboard restraint collar to prevent further self-inflicted damage, and confinement to the cage.

The red mite (*Dermanyssus avium et gallinae*) infestation, which is a usual cause of dermatitis, can be diagnosed by placing a white sheet over the cage during the night. The parasite can be seen on the sheet when removed in the morning. If the bird is infested, clean the cage with a disinfectant§ and rinse with hot water.

Some treatments for red mite are application of: (1) 2 or 3 per cent pyrethrum in talc applied daily for 7 days and then once a week thereafter; (2) 25 per cent pyrethrum powder on the floor of the cage; (3) lindane solution on perches; (4) 10 per cent kerosene spray in light mineral oil; (5) malathion powder on the floor of the cage.

Neurologic Disorders.—Neurologic disorders usually follow a systemic bacterial or viral infection. The death of 60 canaries from a collection of 170 following infection by *Salmonella suipestifer* caused puffing up, convulsions, and death within 2 or 3 days.[7,13] Other Salmonella infections may cause convulsive seizures prior to death.[15] Long-standing nutritional imbalance, arteriosclerosis, and tumor of pituitary gland may also be responsible for neurologic disorders.

Clinical signs include generalized depression, flicking of the tail, inability to fly, locomotor ataxia, chorea involving all or some portions of the body, chirping, and violent or weak encephalitic seizures.

The treatment for chorea is pentobarbital sodium diluted to one half strength and administered at a dose rate of 2 drops every hour until the signs subside. The patient is confined to a cage and room temperature maintained between 75 and 80 F. Oral administration of a broad-spectrum antibiotic at the rate of 1 mg. 4 times a day for 3 or 4 days is advisable. Prednisolone 1/5 mg. 2 times a day administered 3 or 4 days (prepared as for respiratory conditions) may be utilized. Several drops of a solution of Karo syrup and water in equal parts may be given directly into the mouth for nourishment.

The prognosis is unfavorable; mortality is 90 per cent.

Regurgitation (Sour Crop).—Atony of the crop wall, extention of gastroenteritis, improper diet, absence of water, spoiled seed, avitaminosis, lack of activity, normal physiologic instinct, fermentation, gas formation, and engorgement with dry material,[5] are some of the causes of regurgitation.

General signs are depression, visible swelling, and soft fluctuation in the region of the crop, regurgitation of secretions and seeds, stretching of the neck in an attempt to relieve distention, inactivity, anorexia, and diarrhea.

While the patient is held in one hand, the crop is milked with the thumb and index finger of the other hand in an upward direction in an attempt to empty it. Sometimes a blunt probe can be passed down the esophagus to the crop and, by careful agitation, the contents can be more easily expressed. A broad-spectrum antibiotic should

*Neopolycin or Neopolycin H-C, Pitman-Moore Co., Indianapolis, Ind.

**Petonic, Upjohn Co., Kalamazoo, Mich.

†Abdec, Parke, Davis & Co., Detroit, Mich.

‡Benadryl, Parke, Davis & Co., Detroit, Mich.

§Lysol, Lehn & Fink Products Corp., New York, N. Y.

be administered orally or, if the patient is maintaining his water intake, sulfamethazine* can be administered by adding it to the drinking water. One teaspoon of baking soda is added to 8 oz. of the sulfamethazine water to correct excessive acidity. The seeds can be soaked in water before feeding or they can be pre-cracked with the back of a spoon. Lactated pepsin given at the rate of 1 drop 3 times a day will aid digestion. The patient should be protected from drafts and kept at a temperature between 75 to 80 F. If the condition is due to the physiologic paternal instinct, removal of toys and mirrors from the cage may help. Surgical opening of the crop and removal of contents has been successful.

Obesity.—Inactivity, overeating, and endocrine disturbance are some of the reasons why obesity develops.

Clinical signs include inability to fly, ravenous appetite, and large, soft, palpable fat deposits prominent over the pectoral and sternal areas.

If the patient is a canary, eliminate canary seed from its diet and feed rapeseed only until the desired amount of weight is lost.

For overweight parakeets, alternate a week of normal feeding with a week of a millet seed and grit diet.

A multiple vitamin preparation should be added to the feed of all patients.

Egg-Bound.—Hormonal imbalance, deformed eggs, and ovarian cysts are the most common causes of an egg-bound condition.

Straining, protrusion or prolapse of the cloaca, scanty or absence of stools, and presence of a bloody mass at the cloacal orifice are prominent signs.

To treat this condition, insert 1 or 2 dropperfuls of mineral oil into the cloacal area and manually exert pressure anterior to the egg. If this proves unsuccessful, administer a general anesthetic and carefully break down the membranes holding the egg. As a last resort, crack and remove the egg and contents piecemeal, instilling nitrofurazone liquid** into the cloacal area.

Nephritis.—Sequela to viral or bacterial infection, abnormally high protein intake, large consumption of human food, and tumor of the kidney are the most common causes of nephritis. There is a difference of opinion as to the incidence in the canary and parakeet.[17,18]

General signs are depression and watery evacuations containing some formed stool. At certain times, the stools are normal in consistency. There may be edema of the limbs in canaries. There is copius intake of water, poor appetite, and sometimes complete anorexia. Exacerbation and remission of signs, along with emaciation, occur in birds with chronic nephritis.

Treatment consists of chloramphenicol orally, 2 drops every 4 hours for 2 days, and then 2 mg., 3 times a day, for 3 or 4 more days. Limit the bird's activity, remove it from drafts, and maintain a temperature between 75 and 80 F. Have available an adequate supply of fresh water. Keep protein intake as low as possible by using cereals low in protein and high in total digestible nutrients.[20] Use of 1 or 2 gr. of urinary antiseptic in 2 tablespoons of water has been suggested.[14] Also the use of 5 gr. of methenamine dissolved in 1 oz. of drinking water daily for 2 weeks has been recommended. For leg edema, soaking the legs in Burrow's solution, 10 minutes at a time 3 times a day, has been found beneficial.

Emaciation.—Long-standing illness and neglect are the usual reasons for emaciation.

General signs of depression, weakness, falling from perch, prominent breastbone, and thin feathering are indications of emaciation.

Confine the patient to the cage and remove it from drafts. Increase the ratio of canary seed to millet seed from 1:2 to 3:1 parts until there has been a substantial increase in the patient's weight. The appetite and general sense of well-being can be improved by administering 1/5 mg. of prednisolone 2 times a day orally, as previously mentioned.

Circulatory Disturbances.—Sequela to systemic infection and arteriosclerosis are the most common causes of circulatory disturbances.

Depression, slowed heart rate, fainting,[17,18] convulsive seizures, or so-called "strokes," indicate circulatory disorders.

For convulsive seizures, follow recommendations described under neurologic conditions. Hormones, tonics, antibiotics, stimulants, steroids, and multiple vitamins

*Sulmet, American Cyanamid Co., Pearl River, N. Y.
**Furacin, Eaton Laboratories, Norwich, N.Y.

have all been tried in various combinations, but nothing has proved highly successful.

Cnemidocoptic Mange.—The cnemidocoptic mite is the cause of this disorder.

Horny incrustations, honeycombed in appearance, arise from the beak and legs. The mite can be seen in scrapings of the incrustations when they are examined under a microscope.

The incrustations are scraped with a scalpel and n-ethyl-o-crotonotoluide* is applied with a cotton tip applicator every other day.[22] Nitrofurozone** is applied liberally on the alternate day.

Prognosis is favorable if lesions are not extensive.

Stomatitis.—Injuries, infection, and vitamin deficiencies have been incriminated as causes of stomatitis.[7]

A large accumulation of cheesy pus in the mouth, sometimes to such an extent that the bird cannot close its mouth, is a prominent clinical sign.

Remove exudate with a wooden applicator and paint the raw surfaces with 1 per cent gentain violet or another mild antiseptic solution. The condition usually is found in parrots and parakeets. When the condition is seen in canaries, it often proves to be canarypox.

Psittacosis.—The rickettsial organism, called *Miyagawanella psittacci,* is the cause of psittacosis.[1,6,21] Its incubation period is 15 to 60 days.

Anorexia, depression, and green diarrhea are principal clincial signs.

Splenic enlargement and enlarged liver with multiple small abscesses under serous coat, as if salt were sprinkled on it, are classical findings at necropsy.

The administration of 1 or 2 mg. of a broad-spectrum antibiotic, 4 times a day for 4 days has been effective treatment. Some suggest treating prophylactically, with 30 mg. in the feed daily for 15 days all parakeets for sale, to eliminate possible psittacosis infection.

Canarypox.[16]—A filterable virus, *Borreliota avium,* is the etiologic agent, and 2 or 3 weeks is the usual incubation period for canarypox.

In some instances, typical lesions fail to develop, and the only sign is gasping, followed quickly by death. A less acute form is characterized by swelling along the margins of the eyelids until the eyelids close entirely, usually within 3 to 4 days. At times, pustules form in the commissures of the mouth, and bird continually scratch and rub their eyes and beaks. In the terminal stages of infection, small yellowish white lesions often appear in the mouth. Listlessness, weakness, and severe dyspnea precede death. In the chronic form of the disease, lesions of pox appear anywhere on the body and many times develop into wartlike protuberances.

To treat, paint lesions with 1.5 to 3.0 per cent mercurochrome in alcohol. Vaccination for this disease has given inconsistent results. The low incidence in pet birds has given little impetus to perfecting vaccination procedures.

Malaria.—Plasmodium species, transmitted by mosquitoes, cause malaria.[19]

Sudden onset with subcutaneous hemorrhage around the eyes are principal signs.

At necropsy, the liver and spleen are enlarged and gray-brown. The Plasmodium organisms are found in red blood cells and in the spleen.

To treat, windows should be screened to keep out mosquitoes. Atabrine, 24 mg./Gm. of body weight per day is administered. The mortality in aviaries is usually about 25 per cent.

*Eurax, Geigy Chemical Corp., New York, N. Y.
**Furacin, Eaton Laboratories, Norwich, N. Y.

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Evaluation of Prednisone for Mastitis

Antibiotic ointment, with or without 4.5 mg. of prednisone acetate, was instilled into 62 quarters with mastitis. Leukocyte counts and results of the California Mastitis Test showed that prednisone did not hasten recovery.—*Schweig. Arch. Tierheilk., 101, (1959): 444-448; abstr. 614 in Vet. Bull., 1960.*

Method of Carcass Identification for Humanely Slaughtered Animals

Means of identifying carcasses of animals that have been slaughtered and handled in accordance with the humane methods designated in the Humane Slaughter Act will involve use of (1) the familiar round purple stamp now used to identify meat and meat products that have been federally inspected and passed and (2) a list, appearing at frequent intervals in the *Federal Register*, of meat-packing establishments operating under federal meat inspection that slaughter some or all species of animals by approved humane slaughter methods.

A carcass will be considered identified as humanely slaughtered when the official establishment number appearing in the federal meat inspection stamp brand on the carcass also appears in the *Federal Register* list and when the carcass corresponds with the animal species listed as being humanely slaughtered by the establishment concerned.

Under the Act, three methods of slaughter are approved as humane. They include the use of carbon dioxide gas for sheep, swine, and calves; captive-bolt stunners or gunshot for sheep, swine, goats, calves, cattle, horses, and mules; and electric current for stunning of swine, sheep, calves, cattle, and goats before slaughter.—*USDA, 1827-60, June 24, 1960.*

Editorial

Artificial Insemination of Swine

Artificial insemination (AI) of cattle never became an established part of most veterinary practices, although a number of veterinarians throughout the country do perform artificial insemination for their clients or employ technicians for that purpose. Is it likely that artificial insemination of swine will follow this same pattern?

Comments from two veterinarians who are closely involved in programs for AI of swine may help to answer this question. One of them has stated that "further technical advancements and establishment of swine studs will have to come before veterinarians will find it advantageous to incorporate this service into their practices."[5] Another stated, "The role I expect to see a veterinarian play in the swine AI program is to readily assist the program by assuring that it is sound as far as disease control is concerned. . . . Veterinarians should keep posted on AI programs but, in my opinion, a veterinarian can render more service to the industry in other phases of veterinary medicine."[2]

Specifically, there are several reasons why veterinarians are not likely to incorporate AI of swine into their practices:

1) Most veterinarians in rural practice are already putting forth a full-time effort in providing veterinary care for the livestock industry. Consequently, they are not inclined to become involved in programs such as AI which are not directly related to animal disease problems. Artificial insemination of swine appears to offer veterinarians only limited opportunities for correcting infertility and controlling genital diseases in swine.

2) Because other phases of veterinary medicine require more demanding application of their talents than would AI of swine, most veterinarians find little incentive to embark on an AI program. Traditionally, AI programs have not been conducted by veterinarians.

3) Remuneration from conventional practice pursuits is greater than remuneration resulting from participation in AI programs. In Linn County, Iowa, the service fee per sow is $5.00, including repeat inseminations if necessary.[3]

4) Since the sow is in estrus a relatively short time, at least some of the AI calls would have to be considered on an emergency basis. A veterinarian in practice alone would have to be available at all hours for AI calls as well as for emergency work, doubling his off-duty responsibility.

Even if veterinarians were interested, is AI of swine sufficiently developed to permit its widespread use?

Not yet, but all evidence seems to indicate that it will become a well-established industry. Those most intimately involved in AI of swine believe that it is at the same stage of development as AI of cattle was in 1945.

Some obstacles that must be overcome before AI of swine becomes practical are:

1) Conception rates with AI (55%) are still below conception rates achieved using natural service (65 to 70%).[3] Probably conception rates will have to be improved before widespread acceptance can be gained. (Japanese workers claim conception rates as high as 76.8%.)[1]

2) The best semen extenders available today permit only about 10 to 12 breedings per ejaculum from a boar, compared with 500 from a bull. No diluter or preservative has been developed that will extend semen life to 3 or 4 days so that it can be shipped over longer distances.

3) It is not as easy to determine when a sow or gilt is ready for breeding as it is to determine breeding time in a heifer or cow. If breeding time cannot be accurately determined, conception rates will be too low to permit economically feasible artificial insemination.

4) Each sow has to be handled individually, which requires much more effort than conventional pasture breeding methods.

Some advantages that can be expected to result from widespread application of AI of swine are:

1) Boars and boar-handling facilities can be eliminated from the farm.

2) Semen from production-tested boars will become available to owners of small sow herds.

3) Outstanding sires may be bred to a larger number of sows.

4) Diseases that may be transmitted by coitus may be reduced or eliminated.

5) Multiple farrowing operations will be materially assisted by making it possible for many sows to be bred in a short time.

6) The problems arising from differences in ages and sizes of boars in relation to sows and gilts will be minimized.

Three conclusions can be drawn from the above:

1) Veterinarians are not likely to become extensively involved in swine AI programs.

2) Artificial insemination of swine is likely to follow a pattern similar to that of cattle.

3) Programs for AI of swine promise real advantages for swine producers, but before they can become well-established, several obstacles will have to be overcome. —A.F.

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The Cornell Veterinarian Observes Golden Jubilee

The Cornell Veterinarian observes its fiftieth year of publication in 1960. The first issue of this distinguished journal, dedicated to printing the scientific side of veterinary medicine, appeared in June, 1911, with the announced purpose of "promoting loyalty to the veterinary profession and its uplift". That it had no intention of being confined to the boundaries of Cornell is shown by its introductory statement, "It expects to produce articles of merit and of interest not only to Cornell men, but to progressive veterinarians in general". These early objectives have been met probably to a degree never expected by its founders, for it now enjoys world-wide recognition.

Published by a nonprofit organization whose staff are members of the faculty of the New York State Veterinary College, it also has benefited from the services of outstanding veterinary authorities from around the world who have served in the capacity of associate editors. Its current editor is Dr. D. W. Bruner.

With the intent of promoting good veterinary literature in specialized areas, the publishers established the journal *Avian Diseases* in 1957 and, after assuring a sound financial foundation, transferred ownership to the American Association of Poultry Pathologists without cost.

The AVMA congratulates *The Cornell Veterinarian* on the occasion of its golden anniversary and wishes it continued success in the publication of scientific advances in veterinary medicine.

Applications and Enrollment at Veterinary Colleges in the United States and Canada

The ratio of applicants to freshmen admitted has declined from 3.08 to 1 in 1950-1951 to 2.1 to 1 in 1959-1960. The decline is due to a reduction in the number of individuals applying for admission to veterinary colleges, and to a moderate increase in the number of freshmen students enrolled (922 in 1950-1951; 1,069 in 1959-1960). Total enrollment in veterinary colleges has increased at the rate of approximately 1 per cent a year over the past ten-year period (3,451 in 1950-1951 to 3,827 in 1959-1960).

Applicants and Enrollment at Veterinary Colleges

	Applicants*	Freshmen admitted**	Ratio of applicants to freshmen admitted
1950-51	2,842	922	3.08 to 1
1951-52	2,821	976	2.89 to 1
1952-53	2,661	993	2.68 to 1
1953-54	2,603	989	2.63 to 1
1954-55	2,433	1,027	2.37 to 1
1955-56	2,422	1,008	2.40 to 1
1956-57	2,446	1,022	2.59 to 1
1957-58	2,401	1,039	2.31 to 1
1958-59	2,182	1,015	2.15 to 1
1959-60	2,244	1,069	2.10 to 1

*19 schools reported number of applicants; **18 schools, 1950 to 1953; 19 schools, 1954 to 1959; 20 schools, 1959-60

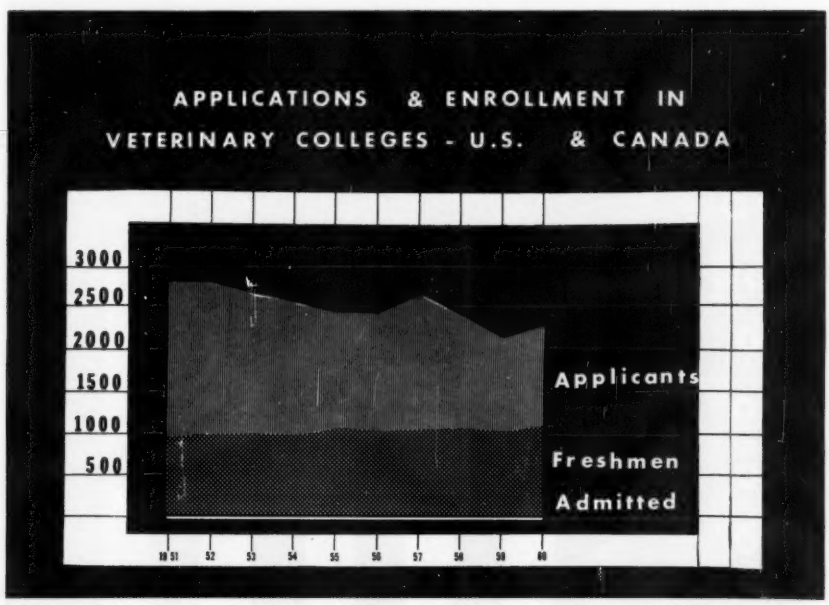


Chart 1—The ratio of applicants to freshmen admitted to veterinary colleges from 1951 to 1960.

Council on Education—1960.

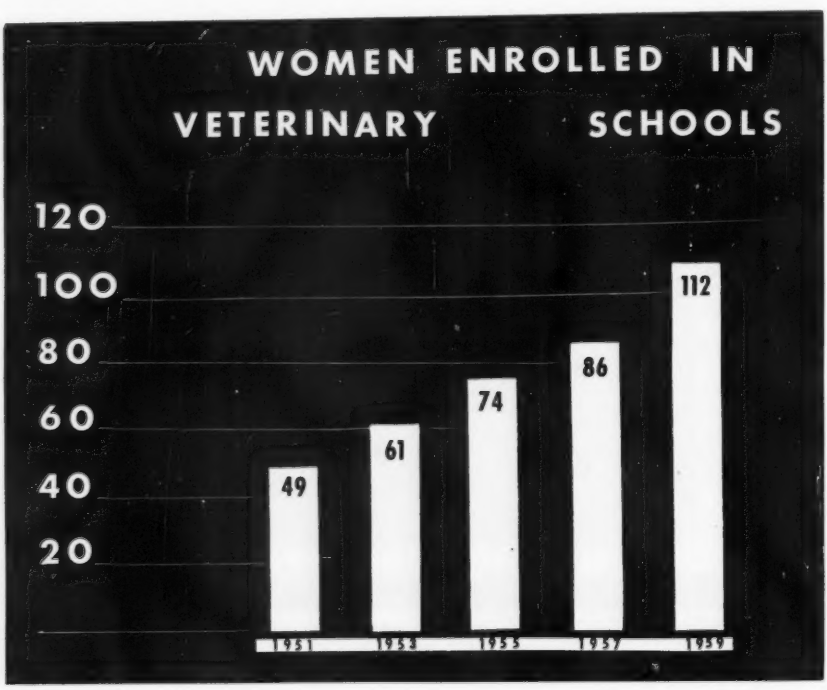
Women Enrolled as Students in Veterinary Colleges

The number of women studying veterinary medicine at colleges in the United States and Canada has increased from 49 in the school year beginning in 1951 to 112 in 1959. All schools except A. & M. College of Texas, Iowa State University, and Ecole de Medicine Vétérinaire (Quebec) admitted women students during this period.

A. & M. College of Texas is not coeducational. Iowa State has previously admitted women students, but did not during the 1951-1960 period.

Women Students Enrolled in Veterinary Colleges

SCHOOL	'50	'51	'52	'53	'54	'55	'56	'57	'58	'59
Alabama	2	1	....	....	1	2	2	3	2	1
California	1	1	1	3	4	7	10	9	8	10
Colorado	....	....	2	....	2	....	3	3	7	8
Georgia	3	4	2	2	4	5	6	8	7	6
Illinois	....	....	2	4	5	6	6	4	5	6
Iowa	....	....	....	....	....	....	....	....	....	....
Kansas	2	1	1	....	2	2	1	1	4	5
Michigan	9	8	8	9	9	9	10	11	7	13
Minnesota	....	2	....	....	....	1	2	4	4	3
Missouri	1	1	....	....	1	1	2	2	1	1
New York	4	4	3	2	4	4	7	9	8	9
Ohio	....	....	1	1	3	3	2	2	5	8
Oklahoma	....	1	1	2	3	4	3	2	5	4
Ontario	12	15	13	17	15	12	14	13	9	16
Pennsylvania	4	6	8	12	12	10	9	7	7	13
Quebec	....	....	....	....	....	....	....	....	....	....
Texas	....	....	....	....	....	....	....	....	....	....
Tuskegee	....	....	....	2	4	3	2	4	4	4
Washington	4	5	7	7	5	5	4	4	6	5
TOTAL	42	49	49	61	74	74	83	86	89	112



from the Research Journal

Anthelmintics for Cattle and Bison

Field studies were conducted with naturally infected bison and Hereford cattle to evaluate the anthelmintic activity of 5 drugs in 13 different combinations, administered principally as feed additives. Quantitative determinations of the number of helminth eggs per gram of feces (e.p.g.) were used to estimate anthelmintic activity.

Daily administration of chlortetracycline (75 mg./kg.) plus phenothiazine (2 Gm./kg.) produced a significant decrease in e.p.g., regardless of whether it was preceded by a 48-Gm. therapeutic dose of phenothiazine. No measurable anthelmintic activity was attributed to chlortetracycline, phenothiazine, diethylstilbestrol, or Dowco 109, an experimental organic phosphate, when these compounds were administered separately. A single 110 mg./kilogram dose of ronnel, in either feed or bolus formulation, significantly reduced the e.p.g. in 2 groups of feedlot cattle for 5 to 7 months, respectively. In range bison, fecal egg counts remained significantly reduced for 36 days following a single 110 mg./kg. of body weight dose of ronnel. No toxic side effects were produced by any of the drugs tested.—[*D. E. Worley and M. F. Hansen: Chemotherapeutic Studies of Gastrointestinal Parasites of Beef Cattle and Bison in Kansas. Am. J. Vet. Res., 21, (May, 1960): 416-421.*]

Combined Respiratory Infections in Cattle

Healthy, weaned, Hereford calves were allotted at random to 4 groups of 4 animals each. Each lot of calves was housed in a separate room of a maximum security isolation unit in which air temperature was maintained at 68 F. Extraneous infection and cross infection were avoided during the course of the experiment. A 2 x 2 factorial design was used; *Pasteurella hemolytica* culture and infectious bovine rhinotracheitis virus were administered at 0 and 1 levels. The calves inhaled an aerosol of the bacterial inoculum. The virus was injected intratracheally. The resultant respiratory disease in the calves given combined inoculums was more prolonged than in calves given 1 inoculum or the other. Biometric analysis of the body temperature data supported the belief that the pathogenicity of *P. hemolytica* for calves was enhanced in the presence of infectious bovine rhinotracheitis virus.—[*J. R. Collier, T. L. Chow, M. M. Benjamin, and A. W. Deem: The Combined Effect of Infectious Bovine Rhinotracheitis Virus and Pasteurella hemolytica on Cattle. Am. J. Vet. Res., 21, (March, 1960): 195-198.*]

Blood Constituents of Range Cattle

As part of an investigation of the relationship of certain nutrients in the soil and forage nutrient levels of the blood of cattle grazing the forage to the health, growth rates, and reproductive efficiency of range cows at Miles City, Mont., blood samples were taken from 30 Hereford cattle at 28-day intervals for 5 years. The cattle were yearling heifers when the work was started. They calved at 3 years of age, and the blood sampling was continued through 3 full years after the first calves were born. The 30 animals sampled represented a lot of 60 cows for which performance data were obtained. The cattle were allotted to 3 groups according to grazing intensity.

Calcium, phosphorus, magnesium, carotene, and vitamin A in the blood plasma were determined. The average values for 39 samplings during the 3 years when the cows

were producing calves were: phosphorus, 3.7 mg./100 ml.; calcium, 9.8 mg./100 ml.; magnesium, 1.6 mg./100 ml.; carotene, 265 μg./100 ml.; and vitamin A, 30μg./100 ml.

The averages for single samplings of the 30 cows varied from 2.1 mg./100 ml. to 5.6 mg./100 ml. for phosphorus, with a range for single samplings of individual cows of 0.4 to 9.8; for calcium, 8.6 mg./100 ml. to 11.6 mg./100 ml., with a range of 6.6 to 14.7; for magnesium, 1.0 mg./100 ml. to 2.4 mg./100 ml., with a range of 0.4 to 3.0; for carotene, 17μg./100 ml. to 902 μg./100 ml., with a range of 9.0 to 1,100.0; and for vitamin A, 20 μg./100 ml. to 40 μg./100 ml., with a range of 7.0 to 54.0.

The values for these same cattle when they were 1 and 2 years old did not differ significantly except in the case of phosphorus, which was higher in the heifers than in the breeding cows.

Since these cows, except the lots in the overgrazed pastures, performed satisfactorily as measured by general health, growth, and reproduction, the values obtained may be considered normal and adequate for range cattle in much of the Northern Great Plains area, when the range is not overstocked. In the cows on overgrazed pastures, the effects of inadequate nutrition were seen in low weights and low calf crops; however, the effects were not reflected in the levels of the blood constituents. There were no significant differences in the plasma levels of calcium, magnesium, carotene, and vitamin A, and the phosphorus levels were consistently somewhat higher in the cows on overgrazed pastures.—[*H. Marsh and K. F. Swingle: The Calcium Phosphorus, Magnesium, Carotene, and Vitamin A Content of the Blood of Range Cattle in Eastern Montana. Am. J. Vet. Res., 21, (March, 1960): 212-221.*]

Cardiac Changes in Cattle at High Altitude

A designed experiment was conducted to study the effect of residence at high altitude upon the pulmonary arterial pressure in cattle and to determine the relationship of the pulmonary arterial pressure to right ventricular mass. Significant elevation of the pulmonary arterial pressure was observed in the animals residing at high altitude (10,000 ft.), while pulmonary arterial pressure of the control animals at low elevation (5,000 ft.) did not change significantly. Four of the 10 animals within the high altitude group had a marked pulmonary hypertension. One of these 4 animals had clinical signs and postmortem lesions of congestive failure of the right side of the heart. A strong positive correlation was demonstrated between the mean pulmonary arterial pressure and the right ventricular mass. The pulmonary hypertensive response at high altitude was postulated to be due to chronic hypoxia. The results of this study further support the role of hypoxia in the pathogenesis of high mountain disease of cattle.—[*A. F. Alexander, D. H. Will, R. T. Grover, and J. T. Reeves: Pulmonary Hypertension and Right Ventricular Hypertrophy in Cattle at High Altitude. Am. J. Vet. Res., 21, (March, 1960): 199-204.*]

Leptospira hardjo in Louisiana Cattle

Leptospira hardjo, not previously isolated from an animal source, was isolated from cattle in Louisiana. The infectious agent was initially transmitted to experimental calves, using urine as inoculum, and subsequently isolated from their blood. Mild transitory fever was the only sign of disease in the 3 calves infected experimentally. A close antigenic relationship of *L. hardjo* and *Leptospira sejroe* in naturally and experimentally infected animals was seen and indicates that *L. hardjo* may be responsible for the widespread occurrence of antibodies detected with *L. sejroe* antigen in cattle in the United States. In addition, the data presented suggest that the herd may also have been infected with *Leptospira pomona*.—[*E. E. Roth and M. M. Galton: Isolation and Identification of Leptospira hardjo from Cattle in Louisiana. Am. J. Vet. Res., 21, (May, 1960): 422-427.*]

Hog Cholera Transmission

Studies were made to obtain information on the mode of transmission of hog cholera. The problem was approached by investigating some of the natural routes of exposure of swine to hog cholera virus (HCV), and by studying some of the possible carriers of the virus. In conjunction with these studies, observations were made on the influence of *Salmonella cholerasuis* on susceptibility of swine to the virus.

In 2 trials, only 2 of 10 pigs exposed orally to tenfold dilutions of HCV developed cholera, whereas all 10 pigs contracted cholera when similarly exposed to HCV plus an innocuous amount of *S. choleraesuis*. One of 3 pigs exposed to undiluted HCV on skin that was apparently unbroken developed the disease, whereas all 3 pigs contracted cholera when similary exposed to a mixture of HCV plus *S. choleraesuis*. With and without the presence of *S. choleraesuis*, all pigs exposed to HCV on abraded skin or in the conjunctival sac developed cholera.

English sparrows (*Passer domesticus*), when allowed to fly from hog cholera-affected pigs to susceptible pigs, transmitted the disease in 2 of 3 trials. Attempts to transmit hog cholera by earthworms (Heliodrilus sp.), stableflies (*Stomoxys calcitrans*), and houseflies (*Musca domestica*) were unsuccessful. Aerosol transmission was successful in 6 of 9 trials in which susceptible pigs were exposed to the exhaust air from isolation cans containing HCV-infected pigs.—[*R. W. Hughes and D. P. Gustafson: Some Factors that May Influence Hog Cholera Transmission. Am. J. Vet. Res., 21, (May, 1960): 464-471.*]

Cultivation of Swinepox Virus

A virus, identified as the swinepox virus, was isolated from pock lesions of swine and associated lice by the use of monolayer cultures of porcine kidney cells. On the fourth blind passage in porcine kidney cells, the virus first produced a cytopathogenic effect characterized by the formation of intranuclear "vacuoles" with the eventual destruction of most of the cells. A cytopathogenic effect also occurred with porcine cells derived from testes, embryo lungs, and embryo brain. Typical pock lesions were produced in swine by inoculating virus of the sixth tissue culture passage. Very small plaques were produced by the virus on monolayer cultures of porcine kidney cells. Serums from hyperimmunized pigs and rabbits did not neutralize, *in vitro*, the swinepox virus.—[*L. Kasza, E. H. Bohl, and D. O. Jones: Isolation and Cultivation of Swinepox Virus in Primary Cell Cultures of Swine Origin. Am. J. Vet. Res., 21, (March, 1960): 269-273.*]

Trichuris Infection of Swine

Two groups of pigs, 78 and 160 days old, were exposed orally to 34,500 to 50,000 infective *Trichuris suis* ova. Records were obtained on the prepatent period, course of production of ova, and pathogenicity of the parasite. The prepatent period was found to be 41 to 45 days; production of ova was characterized by a sharp rise followed by a rapid fall. Clinical signs of experimental trichuriasis included anemia, anorexia, dysentery, and pronounced weight loss, regardless of age. *Trichuris suis* was observed to penetrate the intestinal mucosa with considerable destruction and nodular formation. These studies indicated that the helminth, like Oesophagostomum spp., can cause "nodular disease" in swine and also can act as a provoking factor for secondary invasion with other disease-producing agents.—[*K. G. Powers, A. C. Todd, and S. H. McNutt: Experimental Infections of Swine with Trichuris suis. Am. J. Vet. Res., 21, (March, 1960): 262-208.*]

New Books

A Short Synopis of Human Protozoology and Helminthology

It is the reviewer's opinion that the book has only limited application to veterinary medicine, even in the specialized field of veterinary public health.

This book was apparently written as a quick reference and handbook for students of tropical medicine. In this respect, it is excellent. Is has an almost complete listing of human parasites, much of it, as the author says, condensed from Craig and Faust. The many color plates and line drawings are good. However, the use of the book in veterinary medicine would be limited by its brevity and its almost complete slant toward the human being.—[*A Short Synopsis of Human Protozoology and Helminthology. By L. R. S. Macfarlane. 251 pages; illustrated. Williams & Wilkins Co., Baltimore 2, Md. 1950. Price $7.50.*]—W. E. Brock.

Veterinary Drugs in Current Use

The author of this small volume has listed drugs currently used in veterinary medicine. Drugs are described and their sources and physical and chemical properties are given. The general classification of each drug is also given. All drugs are cross-listed with chemical or generic names and trade or brand names. Through the cross listing, an outstanding feature of the book, it is possible to locate the description of the drug easily. Information on certain food constituents is also included.

Brief descriptions and explanations of various disease processes, with listing of drugs that may be employed in their treatment, add value to this book.

Given for each drug are its principal therapeutic uses; indications for its use; doses for each species for which it is recommended; and warning, where necessary.

The author has written the book for the practitioner who does not have time to refer to the more detailed treatises on pharmacology. It is suitable for this purpose.—[*Veterinary Drugs in Current Use. By Rudolph Seiden. 1st ed. 128 pages. Springer Publishing Co., Inc., 44 East 23rd St., New York, N. Y. 1960. Price $2.25.*]—R. P. Link.

Glossary of Words and Phrases Used in Radiology and Nuclear Medicine

This is a volume written primarily for medical secretaries, residents in radiology, and x-ray technicians though it will serve many others equally well. Veterinarians will find it a useful reference, although the anatomical terminology used by the author is often not the same as that used in veterinary medicine. There are included some observations, suggestions, and samples for guidance in writing understandable roentgenologic reports.

The definitions of words and phrases are concise and readily understood. Most are unique to radiology and nuclear medicine. Those that are not are words or phrases that are used frequently. Only occasionally are definitions inadequate. An example of this is the definition for isotope dilution analysis. In this case, only the direct method is defined. Also, radiostrontium is not mentioned.

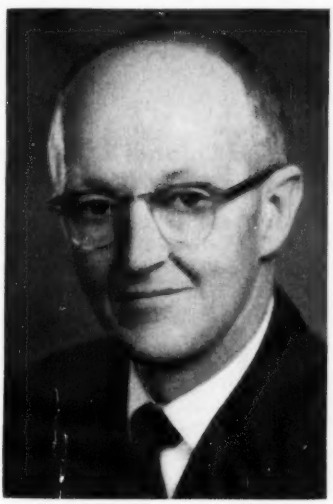
The volume is one that should prove useful as a reference for the veterinarian who has need to read radiologic or nuclear medical reports or scientific papers.—[*Glossary of Words and Phrases Used in Radiology and Nuclear Medicine. By E. E. Etter. 203 pages. Charles C Thomas, Springfield, Ill. 1960. Price $8.50.*]—John H. Rust.

News

Dr. Mark L. Morris AVMA President-Elect

Dr. Mark L. Morris was elected president-elect of the American Veterinary Medical Association at its annual convention August 14-18, 1960, in Denver, Colorado.

Dr. Morris (COR '26), 59, is probably best known for his research in animal nutrition which resulted in the Prescription Diet formulas for dogs. He is currently engaged in research on swine, sheep, and pet animal health.



President-Elect Mark L. Morris

He received his B.S. degree from Colorado State University in 1924 and his D.V.M. from Cornell in 1926. He maintained a large animal practice in New Jersey for five years and then transferred to small animal practice. He served as the president of the AAHA and was one of the original workers on the AVMA Research Council. In 1928 he founded the Raritan Hospital for Animals at Stelton (now Edison), N.J., and still supervises its operation.

After years of clinical research and application, Dr. Morris developed the Prescription Diet formulas. Largely through his interest in research, laboratories were established in Topeka, Kan., where more than 50 different studies are currently underway in swine, sheep, dog, and cat health. The Morris Animal Foundation, the organization that has helped educate 29 veterinarians at 16 different schools, was founded by Dr. Morris.

Dr. Morris' years of service to the veterinary profession include participation in the following organizations: American Association for Advancement of Science, Institute of Food Technologists, New York Academy of Sciences, American Men of Science, National Society for Medical Research, American Veterinary Nutritionists, Animal Care Panel, and the Kansas, Colorado and Ontario V.M.A.'s. He has served as advisor to the Surgeon General and the War Food Administration in World War II, the Merck Institute for Research, and the Seeing Eye Foundation.

Dr. Morris has written two books as well as 17 papers for national veterinary journals.

Dr. Morris and his wife Louise have a daughter, Mrs. Ruth Keesling, who lives in Boulder, Colo., and a son, Lt. Mark L. Morris, Jr., a graduate veterinarian, who is stationed with the veterinary corps at Fort Detrick, Md.

Dr. Morris succeeds Dr. E. E. Leasure, Manhattan, Kan., who was installed as president of AVMA at the covention.

Dr. C. M. Rodgers AVMA Vice-President

Dr. C. M. Rodgers (OSU '34), Blandinsville, Ill., was elected vice-president of the American Veterinary Medical Association at the 97th Annual Meeting in Denver.

Dr. C. M. Rodgers, newly elected AVMA vice-president

Dr. Rodgers has been an alternate delegate to the House of Delegates since 1956.

After he received his veterinary degree, Dr. Rodgers set up a general practice in Avon, Ill., which he operated until he was called into the Army in 1941 to serve in the Field Artillery Division. Military duties completed, after the war Dr. Rodgers went back to Illinois and established a general practice which he still operates in Blandinsville. His practice is mostly large animal.

Dr. Rodgers was elected to Phi Zeta honorary veterinary society while at Ohio. He is a member of the American Association for the Advancement of Science, and also of the American Legion.

American history is at the top of the list of Dr. Rodgers' interests. He attributes his continuing interest in history to the fact that he majored in history while earning his B.A. degree.

Dr. Karl Ohly and Colonel R. H. Eanes Receive AVMA Honorary Memberships

Dr. Karl Ohly, D.V.M. and Col. Richard H. Eanes, M.D., LL.D., hon., U.S. Army, were awarded honorary memberships in the AVMA at the Annual Meeting in Denver.

Colonel Eanes received the honorary membership in recognition of his contributions to medicine and veterinary medicine, both civilian and military, and his cooperation with the veterinary profession during his assignment to the National Headquarters Selective Service System and the War Manpower Commission from 1941 to 1945 and during his service as chief medical officer, National Headquarters Selective Service System from 1945 to 1958.

Colonel Richard H. Eanes

Colonel Eanes was born in Richmond, Va., in 1889. He graduated from the Medical College of Virginia in 1911 and was in private practice until 1917 when he joined the Medical Corps of the Army as a reservist. He was commissioned to the Regular Medical Corps in 1920. The Legion of Merit was awarded Colonel Eanes in 1946 for "contributing materially toward better utilization of the nation's medical, dental, and veterinary skills." An honorary degree of Doctor of Laws was conferred by the Medical College of Virginia. Other Awards given Colonel Eanes include the Legion of Merit, First Oak Leaf Cluster, in August, 1958, for "exceptional meritorious conduct in the performance of outstanding service." On Jan. 31, 1959, Colonel Eanes retired from active military service.

Dr. Karl Ohly, president of the German Veterinary Medical Association, received the AVMA honorary membership in rec-

ognition of his outstanding personal achievements and leadership in the veterinary profession.

Dr. Ohly was born in Giessen, Germany, in 1886. He graduated from the Veterinary College, Ludwig University, in 1910 and started practicing in Land Hesse, Germany. Four years later he joined the German army and served as a veterinary officer until the end of World War I.

Dr. Karl Ohly

From 1919 to 1928, Dr. Ohly was a veterinary practitioner and meat inspector in Land Hesse. In 1928, he was appointed chief veterinarian of Germany and served until his retirement in 1951.

Dr. Ohly is a past-president of the Veterinary Council and member of the Public Health Council of Hesse. He has been president of the West Germany Veterinary Medical Council sinc 1947, and is a member of the Federal Health Council of Germany.

In 1953 he was awarded the Distinguished Service Cross (1st class) by the Federal Republic of Germany and in 1956, the Great Distinguished Service Cross. These awards were made in recognition of his outstanding professional services, achievements, and contributions to his country and the German people.

Awards Presented at 97th Annual AVMA Meeting

Five citations were awarded at the 97th AVMA Convention in Denver, Colo., Aug. 14-18, 1960.

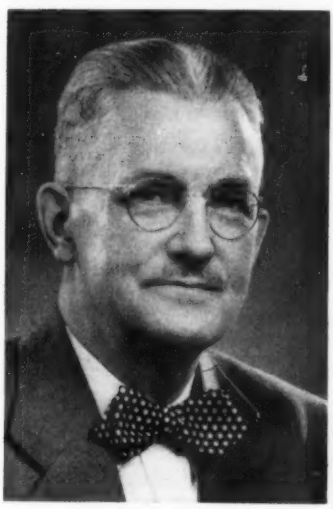
Dr. S. F. Scheidy, AVMA president, presented four of the awards and Mr. John McCain presented the fifth, the Borden Award, at the opening session of the convention, August 15. Following is some information on the awards and some biographical information on the award winners.

1960 AVMA Award

Dr. C. E. DeCamp (COR '23), Scarsdale, N.Y., won the 1960 AVMA Award. This is an award, initiated in 1931, of a gold medal and a certificate, given each year to a veterinarian who has served the AVMA membership meritoriously.

Dr. DeCamp has been a member of the American Veterinary Medical Association and the New York State Veterinary Medical Association for over 35 years. He has been a member of the Veterinary Medical Association of New York City since 1936 and is a charter member of the Westchester County Veterinary Medical Society. He is also a member of the Long Island Veterinary Medical and Metropolitan New Jersey Veterinary Medical Societies.

Dr. DeCamp has been active on many committees of the local, state, and national associations to which he has belonged. He served on the AVMA public relations committee in 1956-57, and the public relations



Dr. C. E. DeCamp

committee of the American Animal Hospital Association in 1958-59. He was chairman of the public relations committee of the New York State V.M.A. from 1940 to 1942, and of the program committee of the West-

chester County V.M.A. from 1941 to 1944 and from 1950 to 1952.

He has also served as secretary of the Westchester County V.M.A. since 1950. Dr. DeCamp conducted a radio program for the society over the local station in 1950-51 and represented the society at local high school career days as veterinary medicine counselor every year since 1940.

Dr. DeCamp has appeared on the programs of state veterinary associations throughout the United States and Canada. He is currently chairman of the Pet Committee of the Person-to-Person International Program. He served as representative for a ten-year period for the National Dog Welfare Guild and National Dog Week.

Not limiting his energies to serving veterinary organizations, Dr. DeCamp was president of the Scarsdale Rotary Club in 1944 and even now occasionally speaks at club luncheons on the services of veterinarians to communities.

During the past two years, he has directed the development and formation of the Interprofessional Society of New York State. Dr. DeCamp originated the idea of developing this organization and used his initiative, energy, and diplomacy in bringing it to its successful fruition. Officers of the New York State Veterinary Medical Society feel the development of this organization is one of the most important contributions to their state veterinary society in its history.

1960 Practitioner Research Award

In recognition of his research contribution to clinical veterinary medicine, the American Veterinary Medical Association gave the 1960 Practitioner Research Award to Dr. Glynden T. Easley (KSU '46).

Dr. Easley, of Sulphur, Okla. obtained a B.S. degree in animal husbandry from the New Mexico State College at Las Cruces in 1938. He was elected to the agricultural honorary society, Alpha Zeta, at the college. For the next two years, he worked for the Agricultural Adjustment Administration at Las Cruces.

In 1940 Doctor Easley became a research fellow in animal husbandry at the University of Missouri and received an A.M. degree in 1942. He then went to southern Peru in connection with the "good neighbor policy" sponsored by the U.S. Department of State to study the factors affecting reproduction and artificial insemination techniques in sheep.

When he was inducted into the army, Dr. Easley was sent to the A.S.T.P. Unit of the College of Veterinary Medicine, Kansas State University.

After receiving his veterinary degree, he joined the staff at the Turner Ranch, Sulphur, Okla., where he stayed for 14 years. Dr. Easley kept a complete history on every animal at the Turner Ranch and these records have provided experimental data for many talks and papers prepared by him and his associates.

Dr. G. T. Easley

Dr. Easley has appeared on the programs of 22 state or regional meetings and two annual AVMA meetings. He is sole author of six publications and co-author of three others. One of his major contributions to veterinary literature was the publication entitled "Bacteriological, Pathological and Clinical Studies of the Reproductive Tract of the Hereford Cow and a Bacteriological Study of Hereford Bull Semen," published with Drs. R. H. Leonard and D. M. Trotter.

Recently Dr. Easley has been investigating the occurrence of cancerous lesions of the eyes of Hereford cattle, in cooperation with a veterinary pathologist at the Armed Forces Institute of Pathology and the cancer research group at the School of Medicine, Houston, Texas. Reports on the results of this investigation will be published in the

near future. Dr. Easley is now interested in analyzing the herd data on manual expulsion of the corpus luteum from the ovaries of Hereford cows.

Twelfth International Veterinary Congress Prize

The Twelfth International Veterinary Congress Prize of $225 and a certificate was awarded to Dr. William A. Hagan (KSU '15) for outstanding service to veterinary science and the veterinary profession.

Dr. Hagan, of Ames, Iowa, received a masters degree from Cornell University in 1917 and an honorary Doctor of Science degree from Kansas State University in 1938.

During a sabbatical leave from Cornell University in 1925-26, Dr. Hagan studied abroad as a European fellow of the International Education Board. In 1945 he served as veterinary consultant to the U.S. Control Council in Germany, assisting military staff officers in planning the rehabilitation of veterinary schools. He is an honorary member of veterinary organizations in Great Britain, France, Sweden, and Greece. He was official U.S. delegate to the 15th International Veterinary Congress in Stockholm in 1953 and was chairman of the U.S. Committee for the 16th International Veterinary Congress held in Madrid in 1959. At the 1959 meeting, Dr. Hagan was elected vice-president of the World Veterinary Association.

Dr. W. A. Hagan

Dr. Hagan has served as consultant to the U.S. Department of Agriculture on a wide variety of animal disease and other veterinary medical problems for many years. In 1946-47, he was a member of the Secretary of Agriculture's advisory committee on foot-and-mouth disease. He helped establish the U.S. Animal Disease Laboratory at Plum Island, New York. Shortly after the announcement of his retirement as dean of New York State Veterinary College, the Department of Agriculture announced his appointment as director of the Department's new National Animal Disease Laboratory at Ames, Iowa, effective Jan. 1, 1960.

In 1958, Dr. Hagan was chairman of a U.S. delegation of six veterinarians who visited the Soviet Union.

Dr. Hagan was president of the American Veterinary Medical Association in 1946-47 and has served on many committees of the Association. He is presently a member of the AVMA Council on Research.

1960 Gaines Award and Medal

Because of the importance to both man and animals of the work of Dr. David K. Detweiler (UP '42), he was given the 1960 Gaines Award of $1,000 and a gold medal.

Dr. D. K. Detweiler

Dr. Detweiler, Broomall, Pa., became associated with the University of Pennsylvania as an assistant instructor in physiology and pharmacology after receiving his degree in 1942, and has risen to the chair of associate professor of pharmacology.

Dr. Detweiler is also chairman, Department of Veterinary Medical Science, Graduate School of Medicine, University of Pennsylvania; chairman, Laboratory of Physiology and Pharmacology, School of Veterinary Medicine, University of Pennsylvania; consultant, WHO on Cardiovascular Disease; and director, Comparative Cardiovascular Studies Unit, University of Pennsylvania.

His research efforts have been in the field of heart disease in animals, electro-cardiography, and pharmacology. He studied at the Veterinary Physiologisches Institut, University of Zurich, Switzerland, as a Guggenheim Postdoctoral Fellow in 1955-56.

Since 1957, Dr. Detweiler has performed extensive studies on cardiovascular disease in dogs and recently, under a grant from the National Heart Institute, he began the first systematic survey of a dog population to determine the prevalence of cardiovascular disease in this species.

1960 Borden Award

Dr. H. H. Dukes (ISC '18), Ithaca, N. Y., was selected by the Borden Co. Foundation as the recipient of the 1960 Borden Award "for his outstanding contributions to Dairy Cattle Disease Control." Dr. Dukes received the award of $1,000 and a gold medal from Mr. John McCain of the Foundation.

Dr. Dukes received his M.S. degree from Iowa State College in 1923. He was a teaching fellow at the college from 1915 to 1918. He then served simultaneously as assistant professor of veterinary science, Clemson College, and assistant state veterinarian for South Carolina from 1918 to 1920. He was in veterinary practice and was city health officer in Greer, S. C. from 1920 to 1921. In 1921 Dr. Dukes returned to the academic field and became an instructor in the Department of Veterinary Physiology at Iowa State College. He has been at Cornell University, Ithaca, N. Y., since 1932, and was, until his recent retirement, professor and head, Department of Physiology of the New York State Veterinary College.

Dr. Dukes' writings in the field of veterinary science are many and varied. His contributions to the control of cattle disease are fundamental and go back to his early studies on physiology of digestion. These basic studies on gastrointenstinal mobility and digestion in the ruminant have served as a starting point in investigations of metabolic diseases of cattle.

The work of Dr. Dukes has had a great effect on the research science and, though more indirect, on the research conducted in the animal dairy and husbandry fields.

Dr. H. H. Dukes

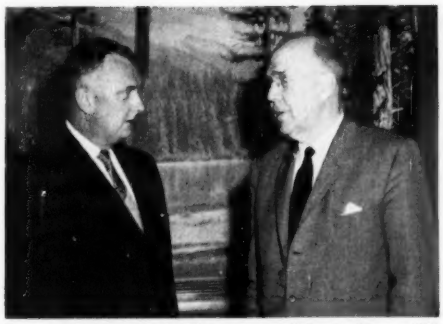
Plants Using Humane Slaughter Methods Increase

More than two-thirds of the nation's livestock slaughtering plants under Federal Meat Inspection are now using humane slaughter methods of one or more species of meat animals.

True D. Morse, Under-Secretary of Agriculture, told the Humane Slaughter Advisory Committee that 354 of the 530 federally inspected plants have converted all or part of their slaughtering operations to comply with the methods designated by the Humane Slaughter Law which went into effect July 1. The law states that only meat products from packers using humane slaughter methods are eligible for sale to Federal agencies.

Under-Secretary Morse cited the law as "a workable, practical guide that would withstand legal review and become a standard for state legislation, for the industry and, perhaps, for the world," and commended the advisory committee for its role in shaping the law.

The committee advised the Secretary of Agriculture on slaughter methods to be designated as humane and on research of these methods. Committee members en-



True D. Morse, Under-Secretary of Agriculture, (R) and Dr. James R. Hay, AVMA director of professional relations, (L) discuss the steadily growing number of livestock slaughtering plants using humane slaughter methods. Dr. Hay served as a member of the Humane Slaughter Advisory Committee to the USDA.

listed the support of the groups they represented in passing the law. They are: Dr. James R. Hay, national veterinary medical organizations; Russell E. Dresser, trade unions; T. H. Broecker, national organizations on slaughter; Donald S. MacKenzie, national organizations on slaughter; John Hargreaves, poultry industry; Sally Butler, general public; Don C. Collins, livestock growers; E. Howard Hill, livestock growers; Rutherford T. Phillips, humane organizations; John C. MacFarlane, humane organizations; Rabbi Joseph B. Soloveitohik, religious faiths; Dr. C. D. Van Houweling, chairman, Agricultural Research Service, USDA.

International Veterinary Food Hygienists to Meet in Switzerland

The second symposium of the International Association of Veterinary Food Hygienists will be held in Basel, Switzerland, May 15-21, 1961.

Two veterinarians from the United States and one from Canada are scheduled to appear on the program. They are: Capt. R. W. Baker (TEX '51), who will speak on the preservation of foods of animal origin by use of ionizing radiation; Dr. C. H. Pals (ISC '32), whose lecture is on the prepackaging of meat, poultry, and fish products; and Dr. T. Lloyd Jones (ONT '34), who will talk about veterinary education and food hygienists.

Other major topics to be discussed at the meeting are minimum requirements of antemortem and postmortem inspection for international acceptance, disposal of meat from animals exposed to ionizing radiation or other radioactive material, and epidemiology of salmonellosis in animals and man.

Veterinarian Finds Lost Fisherman

Dr. Alan Tench, of the ARS force stationed at Laramie, Wyo., went into the Snowy Range to inspect sheep on July 20, 1960, and found a Kansas fisherman who had been lost there for 20 hours.

The elderly fisherman wandered from his friends while they were fishing in a stream and couldn't find his way back to them. He was forced to spend the night in the open. A search party was organized the next morning, but Dr. Tench came across him beside a trail and took him to a nearby logging camp.

Six Veterinary College Deans to Participate in Symposium

Deans of six American veterinary colleges will appear on the program of a veterinary symposium, "The Newer Knowledge about Dogs," in Kankakee, Ill., October 12. The symposium will be sponsored by the Gaines Dog Research Center, New York.

The deans will comment on papers given by six research workers and scientists, who will summarize studies and advances of the last ten years in small animal veterinary medicine.

Dean W. W. Armistead (MSU), will comment on Dr. John L. Fuller's "A Decade of Progress in Canine Genetics;" Dean James E. Greene (AUB), on Dr. Robert W. Kirk's "A Decade of Progress in Kennel Management;" Dean E. C. Stone (WSU), on Dr. W. A. Krehl's, "A Decade of Progress in Nutrition;" Dean I. A. Merchant (ISU), on Dr. James H. Gillespie's "A Decade of Progress in Infectious Diseases;" Dean Mark W. Allam (UP), on Dr. George W. Mather's "A Decade of Progress in Noninfectious Diseases;" and Dean Thomas J. Jones (GA), on Dr. R. E. Rebrassier's "A Decade of Progress in Parasitic Disease."

This is the tenth annual symposium sponsored by Gaines at Kankakee.

Two New Executive Board Members Elected

Drs. Clifford A. Bjork (WSC '41) and Don Spangler (KSU '31) have been elected to serve on the AVMA Executive Board for Districts XI and VI. They met with the Executive Board for the first time at the AVMA 97th Annual Meeting in Denver, August 14-19.

Dr. Bjork of Portland, Ore., who represents District XI (Idaho, Montana, Oregon, and Washington) developed interests in farm, dairy, and veterinary activities early in his life. In high school he participated in farm activities. He fulfilled requirements for dairy production, and dairy manufacturing majors as well as preveterinary studies at California Polytechnic Institute in San Luis Obispo, Calif. After receiving his D.V.M. degree, he was employed by the Rose City Veterinary Hospital, Portland, Ore., where he is now a partner with Dr. Walter H. Steele (COL '32).

Dr. Clifford A. Bjork

Dr. Bjork is a past president of the Portland and Oregon Veterinary Medical Associations. He is now serving as chairman of AVMA's Council on Veterinary Service and as a member of the AVMA House of Delegates Advisory Committee. Dr. Bjork is also a delegate from Oregon to the AVMA House of Delegates.

For ten years Dr. Bjork was veterinarian for the Oregon Racing Commission. He is now chairman of the Portland Zoo Commission and a member of the executive committee of the Portland Zoological Society.

District VI (Iowa and Minnesota) will be represented by Dr. Don Spangler. Immediately after receiving his D.V.M. degree, he entered general practice in Nebraska. Three years later, he was employed by Norden Laboratories as a sales representative and branch manager in Minneapolis, Minn. In 1940, he returned to general practice, this time in Atwater, Minn. He interrupted his practice in Atwater for the Veterinary Corps of the U. S. Army. At the end of the war, he returned to Atwater and now is in semiretirement there.

Dr. Don H. Spangler

Dr. Spangler has quite a record of presidencies. He served as president of the Minnesota State Veterinary Medical Association in 1954 and as president of the Central Minnesota Veterinary Medical Association in 1941 and again in 1948. He has been president of the local school board for 12 of his 15 years of service. Dr. Spangler was also an executive board member of the Minnesota State Veterinary Medical Association from 1950-1954. He is a member of the Gamma Sigma Delta, Phi Kappa Phi, and Sigma Alpha Epsilon fraternities.

The AVMA Executive Board member terms of both Drs. Bjork and Spangler will expire in 1966.

Cornell Establishes New Department

Cornell University announced the establishment of a Department of Physical Biology as part of the New York State Veterinary College. It is believed to be the first depart-

ment of its kind in any veterinary college.

The department will study the effects of radioactive metals in the body with special emphasis on their influence on normal body metabolism. Disease problems caused by radioactive fallout will also be studied.

Cyril L. Comar, internationally-known authority on biological problems due to atomic radiation, has been named head of the department. He will have 34 professors and research workers on his staff.

Dr. Samuel J. Berger Promoted

Dr. Samuel J. Berger (COR '32) has been promoted to chief staff officer for animal foods, USDA Meat Inspection Division, Washington, D.C.

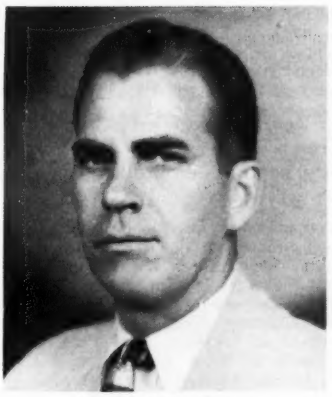
Dr. Samuel J. Berger

Dr. Berger was formerly inspector in charge at the Boston, Mass., Meat Inspection Division for two years. He entered the Meat Inspection Division at St. Joseph, Mo., in 1934 and has since served in supervisory positions at New York, N.Y.; Albany, N.Y.; Chicago, Ill.; Providence, R.I.; and Indianapolis, Ind.

Dr. Berger succeeds Dr. L. J. Rafoth (ISC '43), who was named assistant director for the Northern Area of the Meat Inspection Division.

Dr. Jacob O. Stong to Replace Dr. Berger in Massachusetts

Dr. Jacob O. Stong (ISC '41) has been named inspector in charge, USDA Meat Inspection Division, Boston, Mass. He fills the vacancy created by the promotion of Dr. Berger.



Dr. Jacob O. Stong

Dr. Stong has been assistant inspector in charge of the Los Angeles Meat Inspection Division since 1956. He entered the meat inspection service in 1941 at Fort Worth, Texas, and in 1945 was assigned to San Francisco where he remained until 1956.

Mark L. Morris Animal Foundation Trustees Approve Eight New Studies

Eight new research studies were authorized by the trustees of the Mark L. Morris Animal Foundation at its annual meeting in Boulder, Colo., July 5-8.

The Foundation provides for the education and training of young veterinarians in specialized areas through establishing research grants at the veterinary colleges. New studies approved by the advisory board and trustees were:

Study of Canine Distemper Virus in Tissue Culture, Dr. R. A. Bankowski, Mr. Don E. Lundholm, University of California.

Effects of Ionizing Irradiation on the Canine Ovary, Dr. Carlson, Dr. Edward L. Gillette, Colorado State University.

Congenital Elbow Dysplasia, A Pathologic and Genetic Study, Dr. Carlson, Dr. Glenn A. Severin, Mr. B. H. Fullmer, Colorado State University.

Biochemical Aspects of Reproduction, Dr. William L. Williams, Dr. Charles E. Hamner, Jr., Mr. G. Donovan Kruchko, University of Georgia.

Studies on Acute Pancreatitis in the Dog, Dr. Roger P. Link, Dr. Lloyd C. Helper, Mr. John K. Harding, University of Illinois.

Serum Glutamic Oxalacetic Transaminase Levels in Dogs with Inducted Cardiac Changes, Dr. Victor W. Bolie, Dr. Neal R. Cholvin, Dr. Melvin J. Swenson, Mr. Gerald J. Crawley, Iowa State University.

Rearing Germ-Free Dogs, Dr. C. K. Whitehair, Dr. G. L. Waxler, Mr. W. E. Gagne, Michigan State University.

Canine Distemper in Germ-Free Dogs, Dr. Richard A. Griesemer, Ohio State University.

Each year, the student fellows report on their research projects to the trustees and advisory board. Nine studies currently underway include:

Keratoplasty in the Dog, Dr. Andre Lavignette, Cornell University.

Canine Leptospirosis and Kidney Disease, Dr. Robert Pensinger, University of Illinois.

The Pathogenesis of Bacterial Nephritis, Dr. Ganti A. Sastry, Kansas State University, work performed at Michigan State University.

A Study of Pelvic Fractures in the Dog, Dr. J. S. Larsen, Kansas State University.

Variations in Electrophoretic Patterns of Serum from Dogs with Pelvic Fractures, Dr. E. W. Van Stee, Michigan State University.

Effects of an Ion-Exchange Resin Artificial Kidney in Dogs, Dr. John H. Richardson, Michigan State University.

Lead Poisoning in the Dog, Dr. Richard M. Thomas, Auburn, work done at University of Illinois.

Obesity in the Ovariectomized Bitch, Dr. Frank M. Dost, Washington State University.

Study of the Aging Process in the Dog, Dr. Roger J. Panciera, Cornell University.

World-Wide Veterinary Anatomy Nomenclature Planned

Plans for forming a world-wide veterinary anatomical nomenclature were laid at the meeting of the International Association of Veterinary Anatomists April 14-15 in New York City.

Dr. Josef Schreiber, Austria, president of the International Commission for Veterinary Anatomical Nomenclature, set the stage for the planning session by discussing the problems of establishing a veterinary anatomical nomenclature. Principles and rules to be used in forming the international nomenclature were then set by the Association. To successfully complete the project the anatomists believe they will need the cooperation of doctors in all fields of veterinary specialty.

Dr. L. E. St. Claire (COL '35), chairman of the U. S. Nomenclature Committee, will serve as liaison with foreign nomenclature groups working on the project.

A name change of the Association was approved by the 29 members from eight countries attending the meeting. The World Association of Veterinary Anatomists is the new name selected by the former IAVA. The Association also reviewed its basic aims and activities.

Members of the WAVA Executive Committee are: Prof. C. Bressou, France, president; Dr. R. Getty, U.S.A., first vice-president; Dr. H. Grau, Germany, second vice-president; Prof. R. Barone, France, secretary-general; and Prof. P. Blinn, France, treasurer.

Members of the World Association of Veterinary Anatomists who planned an international veterinary anatomical nomenclature when they met during the VII International Congress of Anatomy in New York City. They are seated left to right: Drs. Christensen (U.S.A.), Grossman (U.S.A.), Sack (Canada), Schreiber (Austria), Simic (Yugoslavia), Papp (U.S.A.), Grau (Germany), Barone (France), Westerfield (U.S.A.), Haviland (U.S.A.), Calhoun (U.S.A.), Engebretsen (Norway), Boumann (U.S.A.), Cross (Great Britain). Standing: Drs. Croshaw (U.S.A.), Julian (U.S.A.), King (Great Britain), Evans (U.S.A.), Tyler (U.S.A.), Williams (U.S.A.), McClure (U.S.A.), Kitchell (U.S.A.), St. Clair (U.S.A.), Getty (U.S.A.), Preuss (Germany), Silver (Great Britain), Habel (U.S.A.), Koch (Germany), and Jennings, (U.S.A.)

Among the States and Provinces

Idaho

IDAHO QUALIFIED AS MODIFIED-CERTIFIED BRUCELLOSIS-FREE AREA.—Idaho, the twenty-fifth state to qualify as a modified-certified brucellosis-free area, received certification July 8 from the USDA.

The Idaho campaign is part of a nationwide brucellosis eradication campaign, conducted cooperatively by USDA's Agricultural Research Service and the states, which has reduced the infection rate by half since 1954. It was directed by Stanley I. Trenhaile, state commissioner of agriculture, and Dr. A. P. Schneider (WSC '38), director of the Idaho Bureau of Animal Industry.

To qualify for USDA certification, the incidence of brucellosis infection within a state cannot be more than 1 per cent of all cattle or 5 per cent of the herds. Once livestock producers in a modified area reach the final eradication goal, the area is designated as brucellosis-free.

Illinois

ASSOCIATION GIVES AWARDS.—The Illinois State V.M.A. gave two awards in May to University of Illinois students for their high scholastic records. The students were Dennis Mann, Mt. Carmel, and Harley Schnowske, Cambridge.

Dr. W. G. Raudabaugh (OSU '38), president of the association, presented the awards at the Sixth Student Scholarship Recognition Convocation of the College of Veterinary Medicine.

Kansas

KSU EXPANDS ANIMAL DISEASE DIAGNOSTIC SERVICES.—Kansas State University's School of Veterinary Medicine will greatly expand its animal disease diagnostic services through a state legislature appropriation of $61,000, announced Dr. E. E. Leasure, dean of the school and president of AVMA.

Staff additions of three full-time veterinarians, two medical technicians, a laboratory assistant, a stenographer, and an animal caretaker will make it possible to handle many more cases and specimens.

Services often performed by the laboratory are serologic tests for animal diseases such as leptospirosis and anaplasmosis and examinations for parasitic and bacterial diseases of animals and poultry. Recently, the diagnostic laboratory received nine animal heads for rabies examination in one morning. Specimens arrive from all over the state, Dean Leasure said.

In the past, 25,000 specimens and cases have been processed annually by the animal disease diagnostic service. They are referred to the laboratory by local veterinarians, state and federal regulatory officers, and physicians for examination.

Maryland

V.M.A. ELECTS NEW OFFICERS.—Dr. Donald R. Lynch (GA '55), Frederick, was elected president of the Maryland State V.M.A. succeeding Dr. Walter Hastings, Jr. (UP '42), Cambridge.

Other officers are: Drs. Charles G. Ziegler (UP '34), Catonsville, first vice-president; Irwin M. Moulthrop (COR '31), Salisbury, second vice-president; and Harry L. Schultz, Jr. (UP '50), Baltimore, secretary-treasurer.

Dr. Leonard Krinsky (MSU '42), Baltimore, was elected to a five-year term on the Board of Directors. Dr. Harold L. Baker (UP '39), Hagerstown, was elected to a four-year term.

Missouri

ST. LOUIS V.M.A. INITIATES NEWSLETTER.—The Greater St. Louis V.M.A.'s first monthly newsletter was mailed to veterinarians in the area July 22, 1960. Future issues of the newsletter will be mailed prior to the Association's monthly meetings and will carry news about the activities, members, and meetings of the St. Louis V.M.A.

The newsletter is an outgrowth of a public relations survey report prepared for the Association last March. The report urged that a regular system of communication between the Association and its members be set up to keep members informed and facilitate an exchange of ideas. Association members have been encouraged to contribute to the newsletter.

Montana

MONTANA V.M.A. PRESIDENT URGES PRACTITIONER COOPERATION.—Montana V.M.A. president, Dr. S. D. Gates (WSC '50), Lewistown, in his address at the 1960 meeting of

the Montana V.M.A. June 24, Waterton Lake, urged that practitioners "encourage qualified young men to enroll in veterinary colleges." The shortage of qualified applicants for veterinary training indicated by several deans of veterinary colleges was cited as the reason. He also suggested that practitioners help Montana veterinary medical candidates by asking members of the Montana legislature to support and increase appropriations to the Western Interstate Commission for Higher Education.

Dr. Gates did not foresee any immediate crisis for the profession, but he stated, "The profession is doing no better than holding its own when compared with related professions and with increased demands being placed upon it by the public." He pointed out that it is the responsibility of the profession to satisfy the demands of the public in all pertinent fields if the profession is to survive and grow.

Nebraska

SECOND SWINE REPOPULATION CONFERENCE HELD.—A group of 70 veterinarians attended the second special conference on swine repopulation July 20-22, held under the auspices of the Department of Veterinary Science and Department of Conferences and Institutes of the University of Nebraska. The conference was similar to one held in February, 1960. It was repeated to meet the growing demand for information on this new area of veterinary specialization.

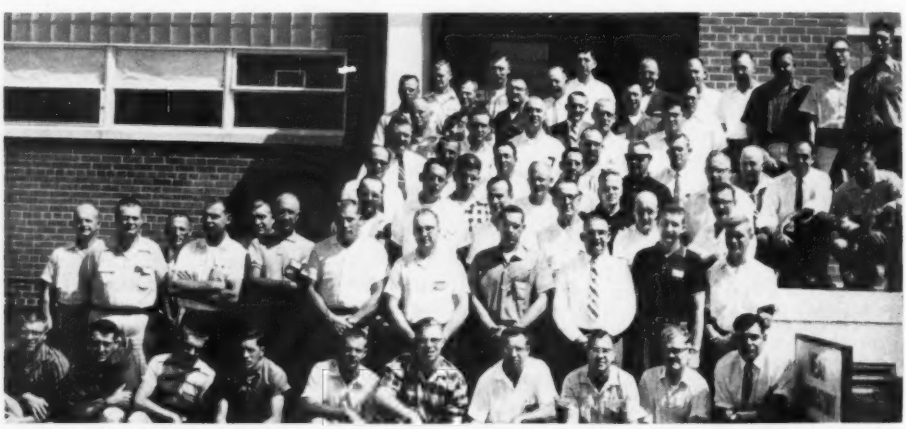
At the conference, the history of methods for producing specific pathogen-free pigs was traced by Dr. George A. Young (COR '43), chairman of the Department of Veterinary Science, Development of Methods and Equipment, University of Nebraska, who originated the hysterectomy technique.

A closed-circuit television demonstration of five hysterectomies was presented. Conference members could observe the details of anesthetization of the sow with CO_2, removal of the gravid uterus, entry of the pigs into the sterile hood, rapid removal of the pigs from the uterus, and details of handling the newborn pigs.

Other highlights of the meeting were discussions of the preparation of rooms and equipment used during the hysterectomy and successful feeding and isolation management practices, carcass disposal, disease elimination and control through the hysterectomy procedure, and rearing and management of specific pathogen-free pigs on the farm.

Articles for incorporation of a National Swine Repopulation Association have been filed at Lincoln as an outgrowth of these sessions. Veterinarians who attended the Swine Repopulation Conferences or took private instruction will be admitted as charter members. Other applications for membership will need recommendations from two or more members in good standing.

Until membership is established and nomination and election can be carried out according to the constitution and by-laws, Dr. Bert O. Combs (ISC '47) will serve as president and Dr. George A. Young, as executive secretary and treasurer.



A group of veterinarians who attended the second special conference on swine repopulation July 20-22 at the University of Nebraska are shown here in front of the meat laboratory of the University.

New York

New York City V.M.A. Exhibits at Health Show

Nurse Diane Brennan listens to a cat's heartbeat at the Veterinary Medical Association of New York City exhibit at the N. Y. Health Show. Dr. Bernard Hershhorn, New York City V.M.A. member, and the cat, Tom, demonstrate that irregular and fast heartbeats in dogs and cats are normal—not necessarily an indication of heart disease. Other features of the exhibit were radiographs of pets and oxygen and blood transfusing equipment.

Pennsylvania

ERIE—DR. AND MRS. R. C. GUISE, PENNSYLVANIA PRESIDENTS.—Dr. Richard C. Guise (UP '44) and his wife form a presidential team in Pennsylvania. On July 14, 1960, Dr. Guise of Harrisburg accepted the president's gavel of the Pennsylvania V.M.A. and Mrs. Guise took the gavel of the Women's Auxiliary to the Pennsylvania V.M.A.

Dr. and Mrs. R. C. Guise, Harrisburg, Pa., presidents of the Pensylvania V.M.A. and the Women's Auxiliary to the Pennsylvania V.M.A., compare presidential gavels.

This is the first time in this Association that a veterinarian and his wife have held presidencies in the V.M.A. and the Auxiliary at the same time.

Another such veterinary presidential couple took their offices at the AVMA annual meeting last year. They are Dr. and Mrs. E. E. Leasure, presidents of the AVMA and the Women's Auxiliary to AVMA.

• • •

VETERINARIAN WRITES NOVEL.—Dr. Eugene Brooks (UP '45), Hatboro, has written his first novel. It is entitled *Cesspools* and will be published this fall by Houghton-Mifflin.

Quebec

SCHOLARSHIPS GRANTED BY THE AGRICULTURAL RESEARCH COUNCIL.—Two recent graduates of veterinary medicine, Drs. Andre Brassard, Orsainville, and Sylvio Cloutier, Ste. Helene de Kamouraska, were awarded scholarships to continue their postgraduate studies by the Agricultural Research Council of the Province of Quebec.

Dr. Brassard will study anatomy and pathology at the University of Pennsylvania School of Veterinary Medicine, Philadelphia.

Dr. Cloutier will specialize in microbiology and virology at the Faculty of Medicine, University of Montreal. He will also study at the Institute of Microbiology and Hygiene in the University's veterinary department.

Tennessee

PULASKI—JOINT TENNESSEE-ALABAMA MEETING HELD.—A joint meeting of the Middle Tennessee and North Alabama V.M.A.'s was held June 5.

At the meeting Dr. H. W. Hahn, School of Veterinary Medicine, Auburn, discussed angiocardiography. The North Alabama group presented a program on gadget and procedure aids available for use in veterinary practice.

Virginia

The new Virginia V.M.A. officers are caucusing already. They are: (L. to R.) Drs. G. B. Estes (MSU '42), Richmond, secretary-treasurer; E. E. Thompson (ISC '34), Salem, president; and G. H. Brumble (TEX '40), Fredericksburg, chairman, Board of Directors.

Veterinary Military News

Illinois

MEAT AND DAIRY HYGIENE STATISTICAL QUALITY CONTROL CLASS HELD.—The first Veterinary Food Inspection Statistical Quality Control Class in the history of the Veterinary Corps recently completed a three-week instruction course at the U. S. Army Medical Service Meat and Dairy Hygiene School in Chicago.

Eight Veterinary Corps officers who are or will be assigned to a supervisory capacity in subsistence inspection activities took the course. Instruction covered methods, analyses, and interpretation of quality control procedures used in the food-processing industry. Practical exercises, field trips, and guest speakers were all part of the instruction. A second course will be conducted later this year.

Deaths

Star indicates member of AVMA

William Bauer, 95, Clarington, Ohio, died July 2, 1960.

Dr. Bauer had practiced veterinary medicine for over 50 years in Monroe County, Ohio.

★**Maurice F. Belden** (OSU '33), 49, Xenia, Ohio, died July 16, 1960.

Dr. Belden was a general practitioner in Xenia for 17 years. He previously had practiced in Greensville, Ohio, and served as a meat inspector for Greene County, Ohio.

Oscar W. Brown (KCV '11), 82, Dwight, Kan., died July 22, 1960.

Dr. Brown had practiced veterinary medicine in Morris County, Kansas, for 44 years.

★**John A. Carlsen** (STJ '22), 66, Clearwater, Fla., died June 19, 1960.

Dr. Carlsen, a native of Denmark, went to St. Joseph, Mo., in 1916 to study veterinary medicine. He was a government meat inspector in Omaha for many years before retiring.

J. B. Current (IND '06), 74, Oliver Lake, Ind., died June 19, 1960.

A native of Portland, Ind., Dr. Current resided in Lagrange County, Indiana, for 47 years.

Charles W. Delano (HAR '98), 83, Boston, Mass., died July 30, 1960.

Dr. Delano operated the F. H. Osgood Hospital for Animals in Massachusetts for almost 50 years with his brother, Dr. Herman Delano, who survives him.

The first Veterinary Food Inspection Statistical Quality Control Class and its instructors. They are: BACK ROW (L TO R): 1st Lt. Ross R. Williamson; Lt. Col. Charles V. Lyday; Col. Lloyd V. Fry; Lt. Col. Walter W. Fechner; Lt. Col. Willys E. Lord; Lt. Col. Joseph E. Reid; Lt. Col. David G. Sprinkle.

FRONT ROW (L TO R): Capt. James M. Lyday; Maj. George E. Ritter, Instructor; Maj. Buford F. Bridges, Instructor; Col. Marion W. Scothorn, Commandant; Lt. Col. John J. Powell, Director of Training; Maj. William A. Bridenstine, Instructor; SP.4 Dennis S. Findley, Instructor; Pvt. Larry H. Hundley, Instructor.

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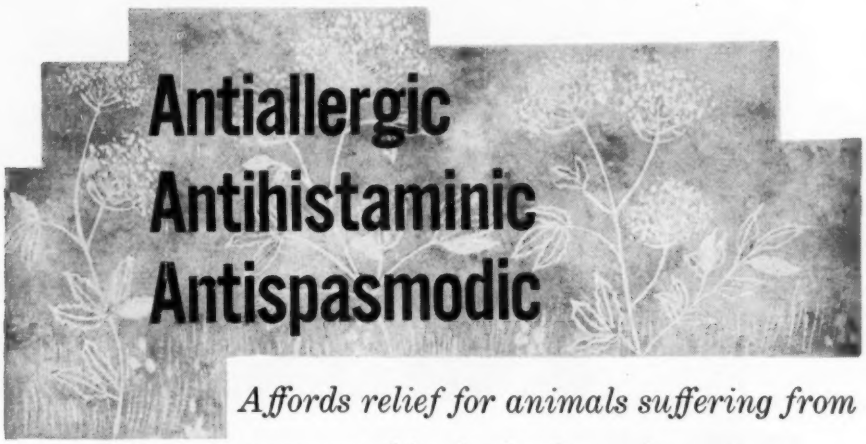

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1. Osborne, J. C. *in* New Horizons in Chemotherapy. Proceedings of First Regional Conference on the Nitrofurans in Veterinary Medicine. In press.
2. Bull, W. S.: N. Amer. Vet. 38: 3 (Jan.) 1957.

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WHAT IS YOUR Diagnosis?

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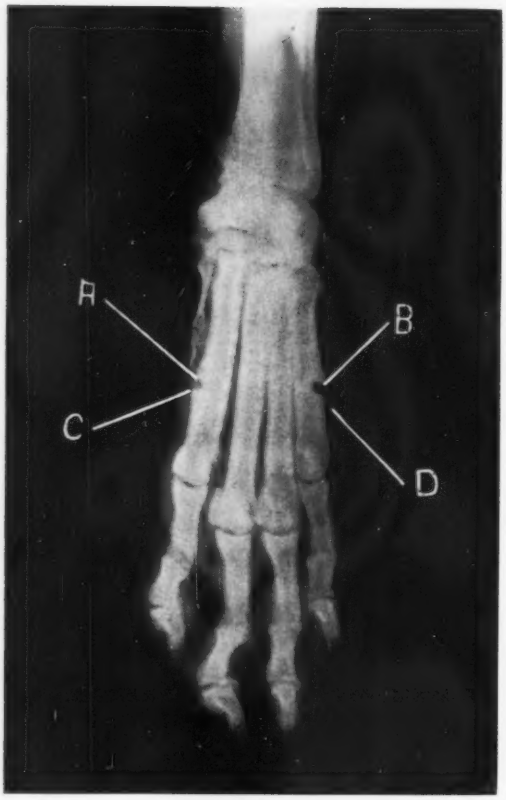
Fig. 1—Dorsoventral radiograph of the left front foot of the Airedale Terrier.

History.—Shortly after the purchase of a male Airedale Terrier, 2 years old, the owner noticed that the dog had an intermittent lameness in the front left leg. The limp was only slight at first but during the next 30 days it gradually became more pronounced. The leg was not swollen, nor was it warm to the touch, but the dog flinched when pressure was applied to the metacarpal region. A dorsoventral radiograph of the tender area was taken (fig. 1).

Here Is the Diagnosis

(Continued from preceding page)



Diagnosis.—A grooved, compression-type lesion extended across the body of the second and fifth metacarpal bones (fig. 2 A & B) of the dog. Especially noticeable was a "punched-out" area on the lateral cortex of the fifth metacarpal bone (fig. 2 B).

Comment.—When the hair was clipped, exposing the skin, a gray linear scar was found encircling the foot. Located beneath the scar was a black rubber band. It was removed and recovery was uncomplicated.

Granulating wounds resulting from pressure necrosis from rubber bands are not unusual on the legs, necks, and tails of dogs. But seldom is the soft tissue reaction in the area so slight as that observed in this dog. Ordinarily, extensive passive congestion, edema, and necrosis would have occurred. On the radiograph, there is no evidence of soft tissue damage (fig. 2 C, D) and grossly none was seen other than the scar.

This case report was submitted by Dr. C. L. Lippincott, Brentwood, Calif., and prepared with the assistance of Dr. Wayne H. Riser, D.V.M., M.S., Kensington, Md.

Fig. 2—Dorsoventral radiograph of the left front foot of the dog. A—bone lesion on lateral surface of fifth metacarpal bone; B—bone lesion on lateral surface of second metacarpal bone; C, D—soft tissue of area.

Quiz for Quidnuncs

1. What are the clinical signs of stomach ulcers in swine? Pages 341 and 342.

2. Which antibiotics proved to be most valuable as treatments for polyserositis and arthritis in swine? Page 346.

3. With what other lamenesses in horses may osetochondrosis of the tibial tuberosity be easily confused? Page 355.

4. For what reasons are most dogs rejected for sentry training at Lackland Air Force Base? Page 357.

5. What conditions predispose to laryngeal collapse in dogs? Page 361.

6. How has the ratio of applicants to freshmen admitted to veterinary colleges changed in the past 10 years? Page 375.

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1. Jones, S. V.; Belloff, G. B., and Roberts, H. D. B.: Vet. Med. 51:413 (Sept.) 1956.

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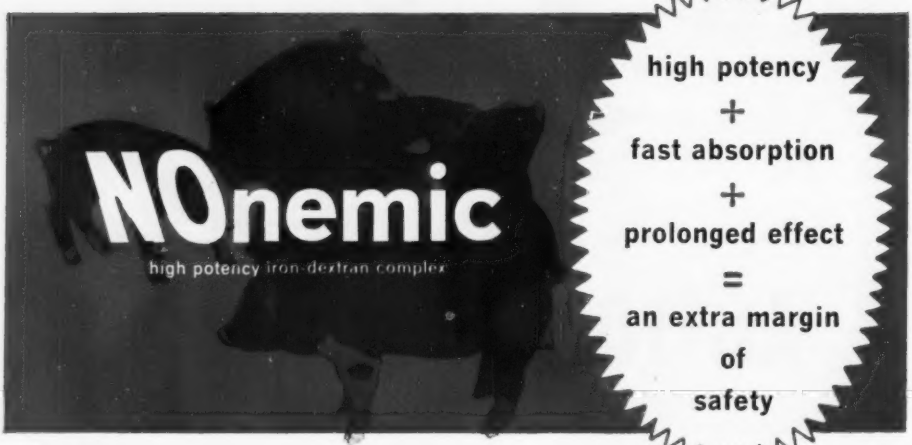

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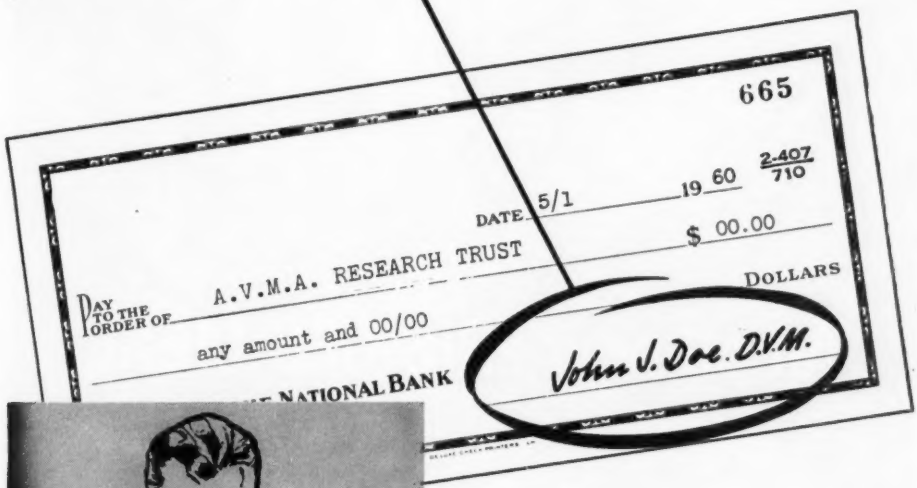

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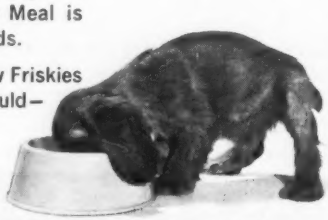

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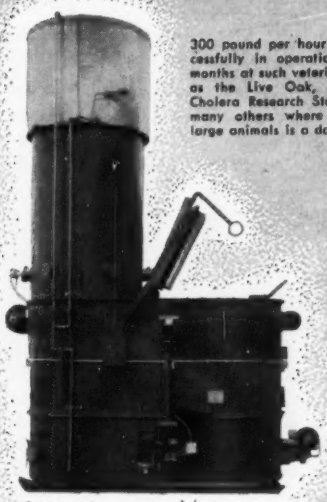

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History of the AVMA

1894

At the 1894 meeting in Philadelphia it was decided to reinstitute the earlier practice of having more than one vice-president of the Association, and representatives of the eastern, central, and western segments of the profession were elected: J. F. Winchester of Massachusetts, T. J. Turner of Missouri, and W. L. Williams of Montana.

C. P. Lyman reported that an act of incorporation of the USVMA had been drawn up and presented to Congress through Senator Lodge of Massachusetts. In February, 1893, Senator Lodge advised: "It is now too late in the session to do anything with any new bill in this Congress, but . . . I think there will be no difficulty in getting it through Congress at the next session. These bills are usually passed without objection." In December: "I will present and introduce your bill, with pleasure . . . . When it gets to the House it will require more looking after to prevent it from being pigeon-holed." In March, 1894: "The bill is in the Committee on Military Affairs [another "veteran" fiasco?] . . . Just now, however, I am so absorbed in the tariff, that it is very difficult for me to give attention to anything, but I will try to do the best I can."

After some months of inaction, Dr. Wm. Dougherty stated upon his third trip to Washington in the interest of the bill ". . . after some pretty hard work, located the bill in the Committee on Agriculture and Forestry, where it still remains." Sentor Lodge had introduced the bill, but the Association was not incorporated until 1916, and then under the laws of Illinois.

C. A. Cary, as chairman of the Committee on Education, recommended that each veterinary college have a full professor for each of 11 departments (including physics and Latin). Too many teachers, he felt, were "practical M.D.'s and theoretical veterinarians . . . . not qualified to become expert professors in Veterinary Medical Colleges."

In response to a letter from a local minister, a resolution was adopted condemning "the operation of 'docking' horses' tails as an operation of fashion . . . . but so long as it is demanded . . . . we believe that it should be performed by skilled Veterinarians . . . . and we cannot unqualifiedly condemn those who perform the operation."

W. H. Hoskins was re-elected president, and J. L. Robertson, treasurer. Leonard Pearson was elected secretary.

W. H. Hoskins, as chairman of the Committee on Congress of Colleges, reported the formation of an Association of Veterinary Faculties of North America with C. P. Lyman as permanent president. Dr. Lyman spoke of "the great encouragement that the movement had met with, and already felt that . . . a better understanding had been accomplished among the schools."

However, Dr. Liautard, who had not attended, later protested in a lengthy letter challenging the constitutionality of the organization: "By what authority does the 'self-named' Association of Faculties exist?" While his school was represented in the group, he objected to the apparent fact that the Association had been rather informally organized by "a *few* persons engaged in teaching in *some* of the veterinary colleges." Instead, he urged that the board of trustees of each college appoint a delegate.

As noted by Merillat and Campbell, from the outset the meetings of Association ". . . . were battlegrounds for a war between the various schools over entrance requirements, length of the course and the curricula . . . . In the beginning the private schools fought one another . . . . Eventually the private schools were lined up uniformly against the state schools . . . . The desideratum in the imbroglio was students. The state schools did not want the private schools to steal them by means of low entrance requirements and a short term. The private schools did not want to lose them to the prestige of state institutions . . . . The fallacy . . . was probably difficult to see at the time . . . there has been no time since 1890 when the reputation for giving a good course did not attract more students than the reputation for low entrance requirements and a 'diploma come quick.' "

To the right is the University of Pennsylvania ambulance about 1894.

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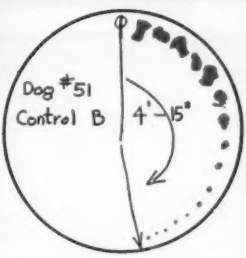

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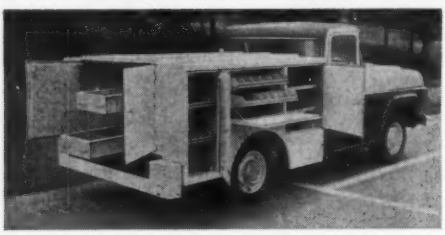

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APPLICATIONS

Applicants Not Members of Constituent Associations

In accordance with paragraph (c) of Section 1, Article I, of the Bylaws, the names of applicants who are not members of constituent associations shall be published in the JOURNAL. Written comments received by the Executive Secretary from any active member regarding the application as published, will be furnished to the Judicial Council for its consideration prior to acceptance of the application.

PERSAUD, BHAGIRATH R. B.
Department of Pathology, Burt Hall,
Kansas State University, Manhattan, Kan.
D.V.M., Kansas State University, 1960.
Vouchers: E. E. Leasure and D. S. Folse.

AVMA Research Fellowships Available

The Council on Research of the AVMA announces the availability of a number of fellowships for postgraduate training for the academic year, 1961-1962.

The recipient of a fellowship must be a veterinarian and a citizen of the United States or Canada. Veterinary students who expect to graduate at the end of the current school year and who wish to follow a career in research may apply for a fellowship.

It is advisable that completed application forms be filed by Jan. 1, 1961, to allow time for correcting omissions and for some reasonable delay in arrival of letters of information from third parties. The latest date for filing the completed application is Feb. 1, 1961. Approximately one month is required for processing completed applications after receipt by the Council. Qualified persons should secure and submit applications as early as possible to insure their file being complete for presentation to the Committee on Fellowships.

The Committee on Fellowships of the Council on Research will meet early in March to consider applications and the awards will be announced soon afterward. The stipend will be determined in each case by the needs of the individual, the location of the school in which he proposes to work, and other factors. In general, the stipends range from 100 per month upward. Any qualified person interested in graduate training may obtain application blanks and other information from the deans of the various colleges of veterinary medicine or by writing to the Council on Research, American Veterinary Medical Association, 600 S. Michigan Ave., Chicago 5, Ill.

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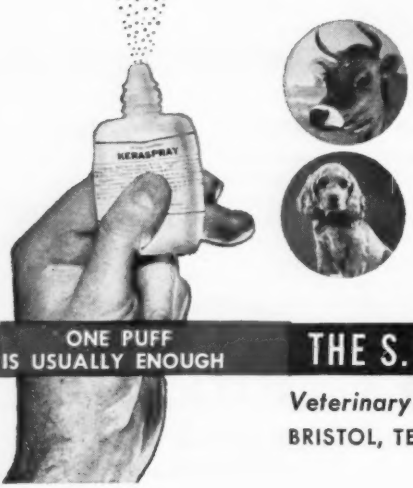

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Coming Meetings

Notices of coming meetings must be received 30 days before date of publication.

Auburn University. Veterinary Clinical Mycology Course. Department of Bacteriology, School of Veterinary Medicine. Sept. 19-20, 1960. Registration fee $25. Enrollment limited to 20. Dr. Marie H. Attlebuger, Department of Bacteriology, School of Veterinary Medicine, Auburn University, Auburn, Ala., associate professor.

Ninth U. S. Civil Defense Council Conference: Medical Health Section. Leamington Hotel, Minneapolis, Minn., Sept. 21-22, 1960. Dr. Carroll P. Hungate, 535 Argyle Building, Kansas City 6, Mo., chairman.

Oregon Veterinary Medical Association. Fall meeting. Eugene, Ore., Sept. 22-24, 1960. Goodrich and Snyder, 1500 S.W. Taylor, Portland 5, Ore.

West Virginia Veterinary Medical Association. Annual meeting. Shenandoah Hotel, Martinsburg, West Va., Sept. 25-26, 1960. Dr. Harry J. Fallon, 200 Fifth St. West, Huntington, West Va., secretary.

American Veterinary Radiology Society. Annual Film Reading Session with speakers. 1 p.m., E.S.T., Sept. 25 1960. Hotel Elkart, Elkhart, Ind. J. J. Fishler, Elkhart, Ind., secretary.

American Humane Association. Annual convention. La-Salle Hotel, Chicago, Ill., Sept. 26-28, 1960. Mr. R. T. Phillips, 896 Pennsylvania St., Denver 3, Colo., executive director.

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Armed Forces Institute of Pathology. Seventh annual course. Armed Forces Institute of Pathology, Washington, D.C., Sept. 26-30, 1960. Deadline for applications is August 15. To apply, write: The Director, Armed Forces Institute of Pathology. Washington 25, D.C.

Northern Illinois Veterinary Medical Association. Annual fall meeting. Wagon Wheel Lodge, Rockton, Ill., Sept. 28, 1960. Dr. Wm. J. Gay, 691 Lake Ave., Woodstock, secretary-treasurer.

Instrument Symposium and Research Equipment Exhibit. 10th Annual Meeting. National Institutes of Health, Bethesda, Md., Oct. 3-7, 1960. James B. Davis, National Institutes of Health, Public Health Service, Bethesda 14, Md., executive secretary.

Continued on adv. p. 45

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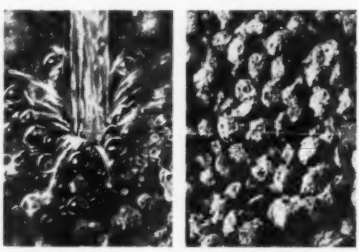

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COMING MEETINGS—continued from adv. p. 43

Illinois, University of. Forty-first annual conference and extension short course for veterinarians. University of Illinois, College of Veterinary Medicine, Urbana, Ill., Oct. 6-7, 1960. L. E. Boley, College of Veterinary Medicine, Veterinary Clinical Medicine, University of Illinois, chairman.

Illinois Conference and Extension Short Course for Veterinarians. College of Veterinary Medicine, University of Illinois, Urbana, Oct. 6-7, 1960. Dr. L. E. Boley, Chairman 1960 Veterinary Conference.

Helminthological Society of Washington. Fiftieth anniversary. Scientific program will be conducted at the University of Maryland, College Park, Md., Oct. 8, 1960. Helminthological Society of Washington, Animal Disease and Parasite Research Branch, ARS, USDA, Beltsville, Md., publicity committee.

Gaines Dog Research Center. Tenth annual symposium. Kankakee Civic Auditorium, Kankakee, Ill., Oct. 12, 1960. Dean C. A. Brandly, School of Veterinary Medicine, University of Illinois, Urbana, Ill., chairman.

Purdue University. Forty-eighth annual conference for veterinarians. School of Veterinary Science and Medicine, Purdue University, Lafayette, Ind., Oct. 12-14, 1960. Erskine V. Morse, dean.

Eastern Iowa Veterinary Association, Inc. Forty-seventh annual meeting. Hotel Montrose, Cedar Rapids, Oct. 13-14, 1960. Charles B. Thayer, Medical Laboratory Center, S. U. I., Iowa City, Iowa, secretary.

Iowa State University. Twelfth Annual Veterinary Homecoming Luncheon. Veterinary Courtyard, Oct. 15, 1960. Daniel King, 419 Y.M.C.A., Moline, Ill., publicity chairman.

New England Veterinary Medical Association. Twenty-sixth annual meeting. Sheraton Biltmore Hotel, Providence, R.I., Oct. 16-19, 1960. L. T. Maloney, New England V.M.A. Consultant, 6 Beacon St., Boston, Mass.

United States Livestock Sanitary Association. Sixty-fourth annual meeting. Daniel Boone Hotel, Charleston, W. Va., Oct. 19-21, 1960. R. A. Hendershott, 33 Oak Lane, Trenton 8, N.J., secretary.

Southern Veterinary Medical Association, Inc. Annual meeting. Francis Marion Hotel, Charleston, S.C., Oct. 23-26, 1960. Otto M. Strock, 461 Maybank Highway, Charleston, S.C., general chairman.

Animal Care Panel. Annual convention. Sheraton-Jefferson Hotel, St. Louis, Mo., Oct. 26-28, 1960. Herbert Graff, 835 S. 8th St., St. Louis, Mo., convention secretary.

Cornell University. Annual nutrition conference for feed manufacturers. Statler Hilton Hotel, Buffalo, N.Y., Nov. 2-4, 1960. For programs, preregistration and hotel reservation cards, contact: Prof. Harold H. Williams, Savage Hall, Cornell University, Ithaca, N.Y., chairman.

Missouri, University of. Thirty-sixth annual veterinary conference. University of Missouri, School of Veterinary Medicine, Columbia, Mo., Nov. 7-8, 1960. Cecil Elder, School of Veterinary Medicine, Veterinary Pathology, University of Missouri, chairman.

Arizona Veterinary Medical Association. Annual meeting. Safari Hotel, Scottsdale, Ariz., Nov. 13-15, 1960. Elmer B. Powell, 1102 S. Scottsdale Rd., Scottsdale, Ariz., local arrangement (phone—WH 5-6479).

Continued on adv. p. 47.

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COMING MEETINGS—continued from adv. p. 45.

Veterinary-Nutrition Conference. Sponsored by Midwest Feed Manufacturers Association and Iowa, Kansas, Missouri, Oklahoma, and Nebraska Veterinary Medical Associations. Continental Hotel, Kansas City, Mo., Dec. 12-13, 1960. Dr. James Bailey, Walnut Grove Products Co., Atlantic, Iowa, chairman.

Wisconsin Veterinary Medical Association. Forty-fifth annual meeting. Schroeder Hotel, Milwaukee, Wis., Jan. 15-17, 1961. W. J. O'Rourke, 540 W. Washington Ave., Madison 3, Wis., secretary.

Arkansas Veterinary Medical Association. Annual meeting. Hotel Marion, Little Rock, Jan. 22-24, 1961. Thayer D. Hendrickson, 7824 Cantrell Rd., Little Rock, Ark., secretary-treasurer.

Minnesota Veterinary Medical Association. Annual meeting. Leamington Hotel, Minneapolis, Minn., Jan. 23-25, 1961. B. S. Pomeroy, 1443 Raymond Ave., St. Paul 8, Minn., secretary.

Ohio State Veterinary Medical Association. Annual meeting. Commodore Perry Hotel, Toledo, Ohio, Feb. 5-8, 1961. Dr. R. E. Rebrassier, 1411 West Third Ave., Columbus 12, Ohio, executive secretary.

Missouri Veterinary Medical Association. Sixty-ninth annual meeting. Hotel Statler-Hilton, St. Louis, Feb. 19-21, 1961. Paul L. Spencer, D.V.M., P.O. Box 283, Jefferson City, Mo., secretary.

Foreign Meetings

Fourth International Congress on Animal Reproduction. The Hague, Netherlands, June 5-9, 1961. For additional information contact: the Secretariat of the Fourth International Congress on Animal Reproduction, 14, Burgemeester de Monchyplein, The Hague, Netherlands, Dr. L. Hoedemaker, secretary to the organizing committee.

Eighth International Congress of Animal Husbandry. Hamburg, Germany, June 13, 1961.

Twelfth World's Poultry Congress. Show Grounds of the New South Wales Royal Agricultural Society, Sydney, Australia, Aug. 13-18, 1962. Dr. Cliff D. Carpenter, chairman, U. S. Participation Committee, 1207 Emerald Bay, Laguna Beach, Calif.; Dr. A. William Jasper, secretary, c/o AFBF, 2300 Merchandise Mart, Chicago 54, Ill.

40 Million Tons of Feed Manufactured in 1959

About 40 million tons of livestock and poultry feed was manufactured in the United States in 1959, according to the American Feed Manufacturers Association.

Production during the first few months of 1960 is expected to continue below last year's levels. However, the outlook for the long run is upward, in view of increases in human population, livestock and poultry numbers, and the rate of usage of manufactured feed.—*Release, Am. Feed Mfr. Assoc., Inc., Feb., 1960.*

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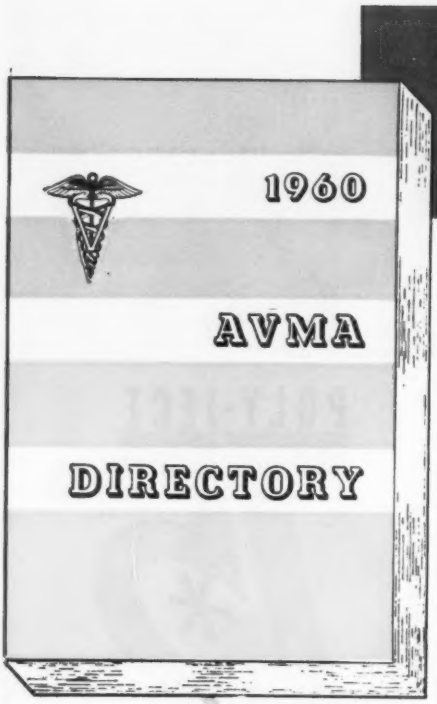

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David B. Porter, D.V.M., has been appointed director of veterinary clinical research for the newly established international section of the division of veterinary medicine of the Norwich Pharmacal Company. His responsibilities will include development and supervision of clinical research.

From 1951 until he joined Norwich, Dr. Porter was a veterinary advisor for the U.S. State Departments' International Cooperation Administration. He served in this capacity in Paraguay, Bolivia, the Dominican Republic, Guatemala, and Ecuador where he helped local government officials, veterinarians and livestock owners on a variety of animal health problems.

A native of Mount Morris, N.Y., Dr. Porter graduated from the New York State Veterinary College at Cornell University in 1944. Thereafter he served three years with the U.S. Army Veterinary Corps.

He has practiced at Brockport, N.Y., and in 1948 joined the Panama Canal Company as veterinary supervisor of dairies. He also operated a private veterinary clinic in the Canal Zone.

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Even in New Zealand, a survey revealed that 79 per cent of the farms in that intensive dairy country had malfunctioning milking machine equipment.

In years past, too few dealers and servicemen have had training or ability to do the type of milking-machine analysis required. Recently, however, at least 2 of the milking-machine manufacturers have planned intensive schooling of key personnel to do this technical work.—*Hoard's Dairyman, 105, (May, 25, 1960): 576.*

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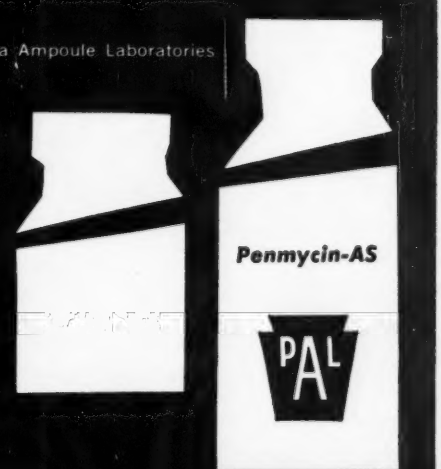

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RESULTS: The following remarks are abstracted from actual clinical investigation reports on the use of SULFABROM SOLUTION on file at the Merck Animal Science Research Department. (1) "*Symptoms:* Recently shipped-in cow. Temperature 106°. Labored breathing. Rales audible over chest area. *Diagnosis:* Pneumonia (shipping fever complex). *Treatment:* 700 cc. SULFABROM SOLUTION in one dose daily for two days. Sixty grams of SULFABROM BOLUSES given at time of I. V. injection. *Results:* Temperature returned to normal in 24 hours". (2) "*Symptoms:* Dystocia with removal by forced extraction of putrified fetus. Temperature 104°. Rapid pulse and breathing. Anorexia. *Diagnosis:* Metritis. *Treatment:* Two doses SULFABROM SOLUTION 700 cc. each. *Results*: Temperature 101.6° in 24 hours. Appetite returning". (3) "*Symptoms:* Foul hoof—limited to 'between the toes' variety with swelling. *Diagnosis:* Foot rot. *Treatment:* 700 cc. SULFABROM SOLUTION *Results:* Eight of 11 animals walked normally in 48 hours with swelling reduced to normal or near normal. Three animals required second treatment and returned to normal in 48 hours."

These quoted reports are typical of those being received from clinical investigators and from veterinarians like yourself. We believe they demonstrate that *the only sulfas available to you exclusively*—new SULFABROM SOLUTION and SULFABROM BOLUSES—are also the most effective you can use.

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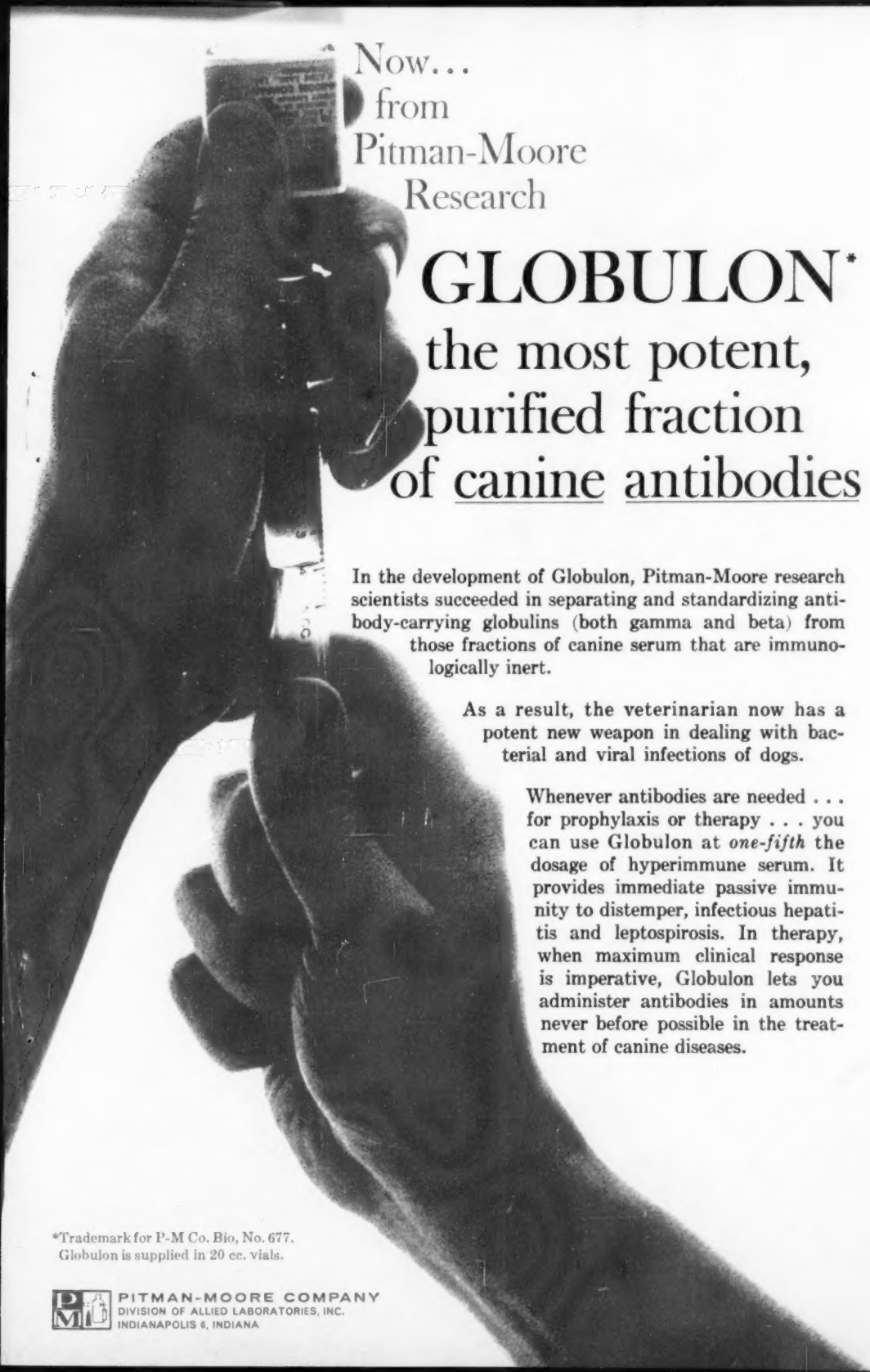

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